

**STATE OF MISSISSIPPI  
HAZARDOUS WASTE MANAGEMENT  
PERMIT**

TO CONDUCT POST-CLOSURE ACTIVITIES OF A HAZARDOUS WASTE  
MANAGEMENT FACILITY IN ACCORDANCE WITH THE REGULATIONS  
GOVERNING HAZARDOUS WASTE MANAGEMENT

**THIS CERTIFIES THAT**

**Rohm and Haas Chemicals LLC  
EPA ID No. MSD008186587**

is hereby authorized to conduct post-closure care for closed surface impoundments  
and a closed hazardous waste landfill

located at

5724 Elder Ferry Road  
Moss Point, Mississippi  
Jackson County

This permit is issued under the authority of the Mississippi Solid Waste Disposal Law, and particularly Section 17-17-27 thereof, and rules adopted and promulgated thereunder, all of which authorize the Mississippi Department of Environmental Quality to enforce all applicable requirements, under the Mississippi Hazardous Waste Management Regulations, and associated conditions included therein.

**MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD**

  
\_\_\_\_\_  
**AUTHORIZED SIGNATURE**

**MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY**

**Permit Issued: February 15, 2023**

**Permit No.: HW008186587**

**Expires: January 31, 2033**



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Figure 3 Surrounding Land Use Map

Figure 4 Facility Layout

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Figure 6 Sanitary Sewer Systems

Figure 7 Injection and Withdrawal Wells within a 2 Mile Radius of the Site

**ATTACHMENT C – POST-CLOSURE PLAN AND FINANCIAL REQUIREMENTS**

*Post Closure Plan* (Parsons, November 22, 2016)

Moss Point Site Operations Manual:

*Landfill Leachate Management* (Parsons, Rev. 3, August 25, 2016)

*Security Guard Inspection Procedure* (Jacobs, Last Reviewed November 29, 2022)

*Hazardous Waste Contingency Plan for Moss Point* (Jacobs, November 2022)

ATTACHMENT D – GROUNDWATER SAMPLING AND ANALYSIS PLAN

*Modifications to Groundwater Detection Monitoring Program, Closed Hazardous Waste Landfill* (Groundwater Services, Inc., Rev. January 13, 2006)

ATTACHMENT E – CONSENT DECREE

*United States of America and the State of Mississippi v. Morton International, Inc.*, Civil Action No. 1:00CV501 (BrR)

Attachment A: “3013 Order”

Attachment B: “Action Levels”

Attachment C: “Corrective Measures Study (“CMS”) Outline”

Attachment D: “RCRA Corrective Action Plan”

*Revised Groundwater Monitoring Plan* (Parsons, November 2, 2016)

*Attachments are taken directly from the application and have been restructured to fit the permit.*



## MODULE 1 – GENERAL PERMIT CONDITIONS

### I.A. EFFECT OF PERMIT

The permittee is authorized to conduct post-closure care at the following closed units: T-Lagoon, V-Lagoons and Hazardous Waste Landfill. The Permittee is authorized to conduct a groundwater detection monitoring program for the closed hazardous waste landfill in accordance with the conditions of the permit. There are other activities ongoing at the site, including, but not limited to investigations, monitoring and remediation of releases of hazardous waste and/or hazardous constituents. These activities are being conducted pursuant to a Consent Decree captioned *United States of America and the State of Mississippi v. Morton International, Inc.*, Civil Action No. 1:00CV501 (BrR) ("Consent Decree"), entered January 11, 2001, which incorporates the provisions of a RCRA Section 3013 Administrative Order ("3013 Order") issued by U.S. EPA Region 4 and MDEQ to Morton. Therefore, the permit shall defer to the requirements of the Consent Decree in regards to all activities regarding Morton's corrective action obligations. Any storage, treatment, and/or disposal of hazardous waste not authorized in this permit or the Consent Decree is prohibited.

Subject to Title 11 Miss. Admin. Code Pt. 3, Ch. 1 Mississippi Hazardous Waste Management Regulations (MHWMR) Rule 1.16 Part 270.4, compliance with this permit constitutes compliance, for purposes of enforcement, with Mississippi Solid Waste Disposal Law of 1974, Section 17-17-1 *et seq.* and Subtitle C of the Resource Conservation and Recovery Act (RCRA), except for those requirements not included in the permit but which become effective by statute or which are promulgated by MHWMR Rule 1.15 Part 268. 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, and invasion of other private rights, or any infringement of state or local laws or regulations. Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Section 3008(a), Section 3008 (h), Section 3013, of Section 7003 of RCRA; Sections 106(a), 104 or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 *et seq.*, commonly known as CERCLA) or any other law providing for protection of public health or the environment.

### I.B. PERMIT ACTIONS

#### I.B.1. Permit Modification, Revocation and Reissuance, and Termination

This permit may be modified, revoked and reissued, or terminated for cause as specified in MHWMR Rule 1.16 Part 270.41, 270.42, 270.43, or 270.50(d). 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 the applicability or enforceability of any permit condition.

I.B.2. Permit Renewal

This permit may be renewed as specified in MHWMR Rule 1.16 Part 270.30(b) and Permit Condition 1.E.2. 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.

I.C. SEVERABILITY

The provisions of this permit are severable, and if any provisions 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.

I.D. DEFINITIONS

For purposes of this permit, terms and conditions used herein shall have the same meaning as those in RCRA and MHWMR Rule 1.23 Part 124, Rule 1.1 Part 260, Rule 1.2 Part 261, Rule 1.7 Part 264, Rule 1.15 Part 268, and Rule 1.16 Part 270; unless this permit specifically provides otherwise. Where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be defined by a standard dictionary or the generally accepted scientific or industrial meaning of the term.

I.D.1. Executive Director

"Executive Director" means the Executive Director of the Mississippi Department of Environmental Quality, or a designee or authorized representative, or as otherwise specified in this permit. The Executive Director also serves as the designee of the Mississippi Environmental Quality Permit Board and the Mississippi Commission on Environmental Quality on actions designated by those two bodies under 11 Miss. Admin. Code Pt, 1, Ch. 1 and 11 Miss. Admin. Code Pt, 1, Ch. 4.

I.D.2. Department

"Department" means the Mississippi Department of Environmental Quality, or its Executive Director and his designees acting on its behalf, with the powers and duties as described in Miss. Code Ann § 49-2-7.

I.D.3. Permit Board

"Permit Board" means the Mississippi Department of Environmental Quality established pursuant to Miss. Code Ann. § 49-17-28 and the Permit Board's designees acting on behalf of the Permit Board under the authority of 11 Miss. Admin. Code Pt, 1, Ch. 4.

I.E. DUTIES AND REQUIREMENTS

I.E.1. Duty to Comply

The Permittee shall comply with all conditions of this permit except to the extent and duration noncompliance is authorized by an emergency permit. Any permit noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of Mississippi Hazardous Waste Management Regulations and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

I.E.2. Duty to Reapply

If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee shall submit a complete application for a new permit at least 180 days prior to permit expiration.

I.E.3. Permit Expiration

Pursuant to MHWMR Rule 1.16 Part 270.50, this permit shall be effective for a fixed term not to exceed ten (10) years. This permit and all conditions herein will remain in effect beyond the expiration date if the Permittee has submitted a timely, complete application (per MHWMR Rule 1.16 Part 270.10, Rule 1.16 Part 270.13 through Part 270.29) and, through no fault of the Permittee, the Permit Board has not issued a new permit, as set forth in MHWMR Rule 1.16 Part 270.51.

I.E.4. 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.

I.E.5. Duty to Mitigate

In the event of noncompliance with the 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.

I.E.6. Proper Operation and Maintenance

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 staffing and training, adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

I.E.7. Duty to Provide Information

The Permittee shall furnish to the Department, within a reasonable time, any relevant information that the Department 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 the Department, upon request, copies of records required by this permit.

I.E.8. Inspection and Entry

Pursuant to MHWMR Rule 1.16 Part 270.30(i), the Permittee shall allow an authorized representative of the Department, upon the presentation of credentials and other documents, as may be required by law, to:

- I.E.8.a. Enter, at reasonable times, upon the Permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;
- I.E.8.b. Have access to and copy, at reasonable times, any records that must be kept under the condition of the permit;
- I.E.8.c. Inspect at reasonable times any facility, equipment (including monitoring and control equipment), practices, operations regulated or required under this permit; and
- I.E.8.d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

I.E.9. Monitoring and Records

The Permit Board may require such testing by the Permittee, and may make such modifications to this permit, deemed necessary to ensure implementation of new regulations or requirements, or to ensure protection of human health and the environment.

- I.E.9.a. Samples and measurements taken for monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be an appropriate method from Appendix I of MHWMR Rule 1.1 Part 261, an appropriate technical procedure developed by EPA Region 4 Lab Services and Applied Sciences Division (LSASD), or an equivalent method approved by the Permit Board. Procedures for sampling contaminated media must be those identified in the EPA Region 4 LSASD procedures or an equivalent method approved by the Permit Board. Laboratory methods must be those specified in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846*, *Standard Methods of Wastewater Analysis*, or an equivalent method approved by the Permit Board. All sampling and/or analytical methods shall be performed using the latest published or approved methods and procedures.

- I.E.9.b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records, records of all data used to prepare documents required by this permit, copies of all reports and records required by this permit, the certification required by MHWMR Rule 1.7 Part 264.73(b)(9), and records of all data used to complete the application for this permit for a period of at least three years from the date of the sample, measurement, report, record, certification, or application. These periods may be extended by the Permit Board at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. The Permittee shall also maintain records for all groundwater monitoring wells and associated groundwater surface elevations for the duration of the post-closure care period. All records required by this condition shall be maintained at the facility or at the office of the facility contact.
- I.E.9.c. Pursuant to MHWMR Rule 1.16 Part 270.30(j)(3), records of monitoring information shall specify:
- i. The dates, exact place, and times of sampling or measurements;
  - ii. The individuals who performed the sampling or measurements;
  - iii. The dates the analyses were performed;
  - iv. The individuals who performed the analyses;
  - v. The analytical techniques or methods used; including any method detection limits for said technique; and
  - vi. The results of such analyses.

I.E.10. Reporting Planned Changes

The Permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility.

I.E.11. Anticipated Noncompliance

The Permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

I.E.12. Transfer of Permits

This permit may be transferred to a new owner or operator only after notice to the Permit Board and only if it is modified or revoked and reissued pursuant to MHWMR Rule 1.16 Part 270.40(b) or Part 270.41(b)(2) to identify the new permittee and incorporate such other requirements as may be necessary under the appropriate act. Before transferring ownership or operation of the facility during its operating life, or of a disposal facility during the post-closure period, the Permittee shall notify the new owner or operator in writing of the requirements of MHWMR Rule 1.7 Part 264 and Rule 1.16 Part 270, of HSWA, and of this permit.

I.E.13. Twenty-Four Hour Reporting

I.E.13.a. The Permittee shall report to the Department any noncompliance with the permit, spill, accident or other occurrence that may endanger health or the environment. (Note: the Permittee shall advise neighboring members of the community and City and County emergency response officials as soon as possible). Any such information shall be reported orally to the Department within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. This report shall include the following:

- i. Information concerning release of any hazardous waste that may cause an endangerment to public drinking water supplies.
- ii. Any information of a release or discharge of hazardous waste, or of a fire or explosion from the hazardous waste management facility that could threaten the environment or human health outside the facility.

I.E.13.b. The description of the occurrence and its cause shall include:

- i. Name, address, and telephone number of the owner or operator;
- ii. Name, address, and telephone number of the facility;
- iii. Date, time, and type of incident;
- iv. Name and quantity of materials involved;
- v. The extent of injuries, if any;
- vi. An assessment of actual or potential hazard to the environment and human health outside the facility, where this is applicable; and
- vii. Estimated quantity and disposition of recovered material that resulted from the incident.

I.E.13.c. A written submission shall also be provided within five days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times; whether the noncompliance has been corrected; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Department may waive the five-day written notice requirement in favor of a written report within 15 days.

I.E.14. Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise required to be reported above at the time monitoring reports are submitted. The reports shall contain the information listed in Condition I.E.13 of this Permit.

I.E.15. Obligation for Corrective Action

Requirements for Corrective Action shall be governed by the Consent Decree referenced in Permit Condition I.A.

I.E.16. Other Information

Whenever the Permittee becomes aware that it failed to submit relevant facts in the permit application or in any report to the Department or Permit Board, the Permittee shall promptly submit such facts or information.

I.F. SIGNATORY REQUIREMENT

All applications, reports, or information submitted to or requested by the Department or the Permit Board, a designee, or authorized representative, shall be signed and certified in accordance with MHWMR Rule 1.16 Part 270.11 and Part 270.30(k).

I.G. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE DEPARTMENT OR THE PERMIT BOARD

All reports, notifications, or other submissions that are required by this permit are to be sent by email to the Hazardous Waste Branch Manager at the following address:

Email Address:  
[HazardousWasteBranch@mdeq.ms.gov](mailto:HazardousWasteBranch@mdeq.ms.gov)

At the request of the department, additional physical copies may be sent to the following addresses:

Mailing Address:  
Mississippi Department of Environmental Quality  
Hazardous Waste Branch  
P.O. Box 2261  
Jackson, Mississippi 39225

Physical Mailing Address:  
Mississippi Department of Environmental Quality  
Hazardous Waste Branch  
515 E. Amite Street  
Jackson, Mississippi 39201

Applications should be submitted in both electronic and physical formats to the addresses listed above.

I.H. CONFIDENTIAL INFORMATION

Unless otherwise requested, all information provided to the Commission, Department, or the Permit Board is subject to public review. Where the Permittee believes information is

confidential, the Permittee must provide a written confidentiality claim when the information is supplied in accordance with Title 11 Miss. Admin. Code Pt. 1 Ch. 2 Mississippi Commission on Environmental Quality Regulations Regarding the Review and Reproduction of Public Records Rule 2.7. Any confidentiality claim must allow disclosure of the confidential information to authorized department employees and/or the United States Environmental Protection Agency (EPA).

Such confidentiality claim must be determined by the Commission to be valid. If the confidentiality claim is denied, the information sought to be covered by the Permittee thereby shall not be released or disclosed, except to the Environmental Protection Agency, until the claimant has been notified in writing and afforded an opportunity for a hearing and appeal therefrom, as with other orders of the commission. Disclosure of confidential information by the EPA is governed by federal law and EPA regulations.

I.I. PERMIT REVIEW PERIOD

This permit is subject to review by the Permit Board five (5) years after the date of issuance and shall be modified as necessary as required under MHWMR Part 270.50(d).

I.J. DOCUMENTS TO BE MAINTAINED

Unless otherwise approved by the Department, the Permittee shall maintain at the facility the following documents and all amendments, revisions, and modifications thereto:

- I.J.1. Inspection schedules, as required by MHWMR Rule 1.7 Part 264.15(b) and this permit;
- I.J.2. Operating record, as required by MHWMR Rule 1.7 Part 264.73 and this permit;
- I.J.3. Post-Closure Plan, as required by MHWMR Rule 1.7 Part 264.118(a) and this permit;
- I.J.4. Financial assurance documentation, as required by MHWMR Rule 1.7 Part 264, Subpart H and this permit; and
- I.J.5. All other documents required by Condition I.E.9 and this permit.

## **MODULE II – GENERAL FACILITY CONDITIONS**

### **II.A. FACILITY DESCRIPTION**

This permit is issued to Rohm and Haas Chemicals, LLC for their Moss Point, Mississippi Facility [MSD 008 186 587] as described in the permit application submitted on November 23, 2016, and hereinafter referred to as “the application.” The permit authorizes the Permittee to conduct post closure and corrective action activities. A general description of the facility and its activities is located in Attachment B of this permit.

### **II.B. DESIGN AND OPERATION OF FACILITY**

The Permittee shall maintain and operate the facility to minimize the possibility of fire, explosion, or any unplanned, sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment, as required by MHWMR Rule 1.7 Part 264.31.

### **II.C. ACTIVITIES THAT REQUIRE NOTICE**

#### **II.C.1. Hazardous Waste Imports**

The Permittee shall not receive hazardous waste from a foreign source.

#### **II.C.2. Hazardous Waste from Off-Site Sources**

The Permittee shall not receive hazardous waste from an off-site source.

#### **II.C.3. Transfer of Permit**

Before transferring ownership or operation of the facility, the owner or operator must notify the new owner or operator in writing of the requirements of MHWMR Rule 1.7 Part 264 and Rule 1.16 Part 270.

### **II.D. SECURITY**

The Permittee shall comply with the security provisions of MHWMR Rule 1.7 Part 264.14(b)(2) and (c) as described in Attachment C of this permit.

### **II.E. GENERAL INSPECTION REQUIREMENTS**

The Permittee shall comply with the inspection requirements of MHWMR Rule 1.7 Part 264.15 and follow the inspection schedule contained in Attachment C. The Permittee shall remedy any deterioration or malfunction of equipment or structures discovered by an inspection, as required by MHWMR Rule 1.7 Part 264.15(c). Records of inspections shall be kept as required by MHWMR Rule 1.7 Part 264.15(d).

II.F. GENERAL WASTE ANALYSIS

There are no ongoing requirements for waste analysis by the Permittee for this closed facility. If at any time wastes are generated in conducting post closure care and corrective actions at the site, such wastes shall be analyzed and properly characterized for disposal. At a minimum, the analysis must contain all the information, which must be known to treat, store, or dispose of the waste in accordance with Rule 1.16 Part 264.13(a) and Rule 1.16 Part 268.

II.G. SPECIAL CONDITIONS

II.G.1. Where a discrepancy exists between the wording of an item in the application and this permit, the permit requirements take precedence over the application.

II.G.2. Where a discrepancy exists between the wording of an item in an attachment and wording in the permit module, the module requirements take precedence over the attachment.

II.G.3. As of February 15, 2007, the applicant for the Hazardous Waste Management Post-closure Permit was changed from Morton International, Inc. to Rohm and Haas Chemicals, LLC. Both companies are wholly owned subsidiaries of Rohm and Haas Company. Any references to Morton International, Inc. in the permit or the permit attachments should be understood to refer to Rohm and Haas Chemicals, LLC.

II.H. LOCATION STANDARD

The hazardous waste management units are not located in an area described by MHWMR Rule 1.7 Part 264.18.

II.I. GENERAL POST-CLOSURE REQUIREMENTS

II.I.1. Post-Closure Care Period

The Permittee shall conduct post-closure care for the closed surface impoundment after completion of closure of the unit and continue for a minimum of 30 years after that date. Post-closure care of the unit shall be in accordance with MHWMR Rule 1.7 Part 264.117 and the Post Closure Plan specified in Attachment C.

II.I.2. Amendment to Post-Closure Plan

The Permittee shall request a permit modification and amend the post closure plan, whenever necessary, in accordance with MHWMR Rule 1.7 Part 264.118(d). The Permittee shall request and obtain a permit modification prior the post-closure removal of hazardous wastes, hazardous waste residues, liners or containment soils in accordance with MHWMR Rule 1.7 Part 264.119(c).

### II.I.3. Post-Closure Notices

The Permittee shall request and obtain a permit modification prior to the post-closure removal of hazardous wastes, hazardous waste residues, liners or contaminated soils from a permitted unit in accordance with MHWMR 264.119(c), except for those activities authorized in this permit including but not limited to leachate and groundwater recovery, or activities governed by the *Consent Decree*.

### II.I.4. Certification of Completion of Post-Closure Care

The Permittee shall certify that post-closure care was performed in accordance with the Post-Closure Plan specified in Attachment C as required by MHWMR Rule 1.7 Part 264.120.

## II.J. FINANCIAL REQUIREMENTS

### II.J.1. Cost Estimate for Closure

The Permittee must have a detailed written estimate of the cost of post-closure care and correction action activities for the facility, as per MHWMR Rule 1.7 Part 264.144(a).

II.J.1.a. The Permittee's most recent post-closure cost estimate, including Corrective Action, is contained in the application and in Appendix C.

II.J.1.b. The Permittee must revise the post-closure cost estimate whenever there is a change in the facility's post-closure plan as required by MHWMR Rule 1.7 Part 264.144(c), or if there is a change in the Corrective Action Plan.

II.J.1.c. The Permittee must keep at the facility, or at a mutually agreed upon location, the latest post-closure/corrective action cost estimate as required by MHWMR Rule 1.7 Part 264.144(d).

### II.J.2. Financial Assurance for Facility Closure

The Permittee shall demonstrate continuous compliance with MHWMR Rule 1.7 Part 264.145 and MHWMR Rule 1.7 Part 264.101(b) by providing documentation of financial assurance, as required by MHWMR Rule 1.7 Part 264.151, in at least the amount of the cost estimate required by Condition II.J of this permit. Changes in financial assurance mechanisms must be approved by the Executive Director pursuant to MHWMR Rule 1.7 Part 264.145.

### II.J.3. Incapacity of Owners or Operators, Guarantors, or Financial Institutions

The Permittee shall comply with MHWMR Rule 1.7 Part 264.148 whenever necessary.

## II.K. OPERATING RECORD

Pursuant to MHWMR Rule 1.7 Part 264.73(a), the Permittee must keep a written operating record of post-closure care activities and those activities specified in MHWMR Rule 1.7 Part 264.73(b)(6) and Part 264.280(c). These records will be maintained at the facility or in the custody of the facility contact person and shall be made available upon request. At a minimum, the following information must be recorded and maintained in the operating record until final closure (as defined in MHWMR Rule 1.1 Part 260.10):

- Records of inspections
- Monitoring, testing and analytical data
- Groundwater monitoring data

## II.L. ANNUAL REPORT

The permittee shall report, by March 1 of each year, the types and amounts of hazardous waste treated, stored, recycled, and/or disposed during the preceding calendar year, per the requirements of MHWMR Rule 1.8.

## MODULE III – POST-CLOSURE CARE

### III.A. APPLICABILITY

The Permittee shall provide post-closure care for the closed T-lagoon, V-lagoon, and the Hazardous Waste Landfill, described in Attachments B and C, in accordance with MHWMR Rule 1.7 Part 264.110 and the terms and conditions of this permit.

### III.B. POST-CLOSURE PROCEDURES AND USE OF PROPERTY

#### III.B.1. Post-Closure Care Period

The Permittee shall conduct post-closure care for each unit identified in Permit Condition III.A above beginning on the date of closure and continue for 30 years after that date. The Permit Board may approve the 30-year post-closure care period be shortened upon application and demonstration that the facility is secure, or the Permit Board may extend the post-closure period if the Board finds this is necessary to protect human health and the environment.

#### III.B.2. Post-Closure Care

The Permittee shall maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of MHWMR Part 264 Subpart F during the post closure period for the hazardous waste landfill. All other groundwater monitoring activities at the facility during post-closure shall be governed by the requirements of the Consent Decree referenced in permit Condition I.A.

In the event that there is a confirmed release to the groundwater from the hazardous waste landfill requiring that corrective action be implemented, the groundwater monitoring and corrective action activities shall be in accordance with the Consent Decree.

The Permittee must comply with all post-closure requirements contained in MHWMR Rule 1.7 Part 264.117 through 264.120, including maintenance and monitoring throughout the post-closure care period specified in this section and in Attachment C and Attachment D. At minimum, the Permittee must:

- III.B.2.a. Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events;
- III.B.2.b. Prevent run-on and run-off from eroding or otherwise damaging the final cover.
- III.B.2.c. For the hazardous waste landfill, the permittee shall continue to operate the leachate collection and removal system until leachate is no longer detected through visual observation of the leachate sumps.

- III.B.2.d. For the hazardous waste landfill, the Permittee shall maintain and monitor the leak detection system in accordance with MHWMR Rule 1.7 Part 264.301(c) (3)(iv), 264.301(c)(4), 264.303(c), and comply with all other applicable leak detection requirements of MHWMR Rule 1.7 Part 264, and the approved Post-Closure Plan, Permit Attachment C.
- III.B.2.e. For the hazardous waste landfill, the Permittee shall protect and maintain the surveyed benchmarks used in complying with the surveying and recordkeeping requirements of MHWMR Rule 1.7 Part 264.309.
- III.B.2.f. For the hazardous waste landfill, if it is determined that a leak in the primary liner is indicated, the Permittee shall take remedial action as described in the Post Closure Plan, Permit Attachment C.
- III.B.2.g. Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of MHWMR Rule 1.7 Part 264 Subpart F, K, and N.

### III.B.3. Security

The Permittee shall comply with all security requirements, as specified in Permit Attachment C.

### III.B.4. Integrity of the Final Cover

The Permittee shall not allow any use of the units designated in Condition III.A. that will disturb the integrity of the final cover, or the function of the facility's monitoring system during the post-closure care period.

### III.B.5. Post-Closure Plan

The Permittee shall implement the Post-Closure Plan, Permit Attachment C. All post-closure care activities must be conducted in accordance with the provisions of the Post-Closure Plan.

### III.B.6. Retention of Post-Closure Plan

The permittee, or the person specified in MHWMR Rule 1.7 Part 264.118(b)(3), must keep the approved post-closure plan during the remainder of the post-closure period.

## III.C. INSPECTIONS

The Permittee shall inspect the components, structures, and equipment at the site in accordance with the Inspection Schedule in Permit Attachment C.

### III.D. NOTICES AND CERTIFICATION

#### III.D.1. Post-Closure Notices

If the Permittee or any subsequent owner or operator of the land upon which the hazardous waste disposal unit is located, wishes to remove hazardous wastes and hazardous waste residues; or contaminated soils, the permittee shall request a modification to this post-closure permit in accordance with the applicable requirements in MHWMR Rule 1.23 Part 124 and MHWMR Rule 1.16 Part 270, except for those activities authorized in this permit including but not limited to leachate and groundwater recovery, or activities governed by the Consent Decree. The Permittee or any subsequent owner or operator of the land shall demonstrate that the removal of hazardous wastes will satisfy the criteria of MHWMR Rule 1.7 Part 264.117(c).

#### III.D.2. Post-Closure Permit Modifications

The Permittee must request a permit modification to authorize a change in the approved Post-Closure Plan. This request must be made in accordance with applicable requirements of MHWMR Rule 1.23 Part 124 and MHWMR Rule 1.16 Part 270 and must include a copy of the proposed amended Post-Closure Plan for approval by the Permit Board. The Permittee shall request a permit modification whenever changes in operating plans or facility design affect the approved Post-Closure Plan, there is a change in the expected year of final closure, or other events occur during the active life of the facility that affect the approved Post-Closure Plan. The Permittee must submit a written request for a permit modification at least 60 days prior to the proposed change in facility design or operation or no later than 60 days after an unexpected event has occurred which has affected the Post-Closure Plan.

#### III.D.3. Certification of Completion of Post-Closure Care

No later than 60 days after completion of the established post-closure care period for each disposal unit, the Permittee shall submit to the Executive Director, by registered mail, a certification that the post-closure care for the hazardous waste disposal unit was performed in accordance with the specifications in the approved Post-Closure Plan. The certification must be signed by the Permittee and an independent, professional engineer registered in the State of Mississippi. Documentation supporting the independent, professional engineer's certification must be furnished to the Department upon request until the Executive Director releases the Permittee from the financial assurance requirements for post-closure care under MHWMR Rule 1.7 Part 264.145(i).

III.E. FINANCIAL ASSURANCE

- III.E.1. The Permittee shall maintain financial assurance during the post-closure period and comply with all applicable requirements of MHWMR Rule 1.7 Part 264, Subpart H.
- III.E.2. The Permittee shall demonstrate to the Executive Director that the value of the financial assurance mechanism exceeds the remaining cost of post-closure care, in order for the Executive Director to approve a release of funds.
- III.E.3. The Permittee shall submit itemized bills to the Executive Director when requesting reimbursement for post-closure care.

## **MODULE IV – GROUNDWATER PROTECTION**

### **IV.A. APPLICABILITY**

- IV.A.1. The requirements of this part shall apply to the Hazardous Waste Landfill.
- IV.A.2. The detection monitoring program shall be conducted by the Permittee as outlined herein as required under MHWMR Rule 1.7 Part 264.91 and Part 264.98.
- IV.A.3. As specified in MHWMR Rule 1.7 Part 264.95, the point of compliance for the waste management area comprised of the Hazardous Waste Landfill is represented by a vertical surface located at the hydraulically down gradient limit of the waste management area which intercepts five (5) monitoring wells listed in Permit Condition IV.B.1.

### **IV.B. WELL LOCATION, INSTALLATION AND CONSTRUCTION**

The Permittee shall install and maintain a groundwater monitoring system for the closed Hazardous Waste Landfill as specified below:

- IV.B.1. The Permittee shall install and maintain ground water monitoring wells at the locations specified in Permit Attachment D and in conformance with the following list:
  - MW-32
  - MW-33
  - MW-34
  - MW-134
  - MW-135
- IV.B.2. The Permittee shall maintain the monitoring wells identified in Permit Condition IV.B.1. in accordance with the detailed plans and specifications presented in Permit Attachment D.
- IV.B.3. All wells deleted from the monitoring program shall be plugged and abandoned in accordance with applicable state regulations. Well plugging and abandonment methods and certification shall be submitted to the Executive Director within thirty (30) days from the date the wells are removed from the monitoring program.

IV.C. INDICATOR PARAMETERS AND MONITORING CONSTITUENTS

IV.C.1. The Permittee shall monitor groundwater, as described in Permit Condition IV.B., for the following constituents:

Parameter or Constituent

Toluene  
Aniline  
Phenol

IV.D. SAMPLING AND ANALYSIS PROCEDURES

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from groundwater monitoring wells described in Permit Condition IV.B:

- IV.D.1. Samples shall be collected using the techniques described in Appendix B of the approved Phase I Workplan, and the most recent approved version of the facility’s “Groundwater Monitoring Plan”, originally approved by EPA on April 9, 2001, and as amended.
- IV.D.2. Samples shall be preserved and shipped, in accordance with the techniques described in Appendix B of the approved Phase I Workplan, and the most recent approved version of the facility’s “Groundwater Monitoring Plan”, originally approved by EPA on April 9, 2001, and as amended.
- IV.D.3. Samples shall be analyzed in accordance with the procedures described in Appendix B of the approved Phase I Workplan, and the most recent approved version of the facility’s “Groundwater Monitoring Plan”, originally approved by EPA on April 9, 2001, and as amended.
- IV.D.4. Samples shall be tracked and controlled using the chain-of-custody procedures specified in Appendix B of the approved Phase I Workplan, and the most recent approved version of the facility’s “Groundwater Monitoring Plan”, originally approved by EPA on April 9, 2001, and as amended.

IV.E. ELEVATION OF THE GROUNDWATER SURFACE

- IV.E.1. The Permittee shall determine the elevation of the groundwater surface at each well each time the groundwater is sampled, in accordance with Permit Condition IV.G.2.
- IV.E.2. The Permittee shall determine and record the surveyed elevation of any future monitoring well(s) when installed.

IV.F. STATISTICAL PROCEDURES

When evaluating the monitoring wells in accordance with Permit Condition IV.G., the Permittee shall use the following procedures:

- IV.F.1. The Permittee shall conduct the statistical procedures as presented in Permit Attachment D, “Modifications to the Groundwater Detection Monitoring Program, Closed Hazardous Waste landfill”, revised June 26, 2006.

IV.G. MONITORING PROGRAM AND DATA EVALUATION

- IV.G.1. The Permittee shall collect, preserve, and analyze samples pursuant to Permit Condition IV.D.
- IV.G.2. The Permittee shall determine ground-water quality at each monitoring well at the compliance point semi-annually during the post-closure care period.
- IV.G.3. The Permittee shall determine the ground-water flow rate and direction in the uppermost aquifer at least annually.
- IV.G.4. The Permittee shall determine whether there is a statistically significant increase over the background data set for each parameter identified in Permit Condition IV.C.1. each time ground-water quality is determined at the compliance point. In determining whether such an increase has occurred, the Permittee must evaluate the ground-water quality at each monitoring well specified in Permit Condition IV.B.1. in accordance with the statistical procedures specified in Permit Condition IV.F.
- IV.G.5. The Permittee shall perform the evaluations described in Permit Condition IV.G.4. within one hundred and twenty (120) days after completion of sampling.

IV.H. RECORDKEEPING AND REPORTING

- IV.H.1. The Permittee shall maintain records of all monitoring, testing, and analytical data obtained in accordance with Permit Condition IV.G. until completion of post-closure care.
- IV.H.2. The Permittee shall submit the analytical results required by Permit Conditions IV.G.2. and IV.G.3. and the results of the statistical analyses required by Permit Condition IV.G.4., at least annually. The report may be submitted as part of a site-wide groundwater report required under the *Consent Decree*.
- IV.H.3. Reserved.
- IV.H.4. If the Permittee determines, pursuant to Permit Condition IV.G.4, that there is a statistically significant increase above the background data set for the parameters specified in Permit Condition IV.C.1., the Permittee may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation. In such cases, the Permittee shall:
- IV.H.4.a. Notify the Executive Director in writing within seven (7) days that the Permittee intends to make a demonstration.

- IV.H.4.b. Within 90 days, submit a report to the Executive Director which demonstrates that a source other than a regulated unit that caused the increase, or that the increase resulted from error in sampling, analysis or evaluation.
- IV.H.4.c. Within 90 days, submit to the Executive Director an application for a permit modification to make any appropriate changes to the detection monitoring program at the facility.
- IV.H.4.d. Continue to monitor in accordance with the detection monitoring program at the facility.

IV.I. ASSURANCE OF COMPLIANCE

Reserved.

IV.J. SPECIAL REQUIREMENTS IF SIGNIFICANT INCREASES OCCUR IN VALUES FOR CONSTITUENTS

If the Permittee has determined a statistically significant increase over the background data set for any of the parameters and/or constituents identified in permit conditions IV.C.1., in accordance with statistical procedures specified in Permit Conditions IV.F., the Permittee must:

- IV.J.1. Notify the Executive Director in writing, within seven (7) days. The notification must indicate what parameters or constituents have shown statistically significant increases.
- IV.J.2. Immediately sample the groundwater in all wells identified in Condition IV.B.1 and determine the concentration of all constituents identified in Appendix IX of MHWMR Rule 1.2 Part 261.
- IV.J.3. Establish background values for each Appendix IX constituent found in the groundwater.
- IV.J.4. The detection monitoring requirements of this permit shall become inactive upon confirmation of a statistically significant increase of any parameter and completion of Permit Condition IV.J.3., and groundwater monitoring activities shall be governed by the provisions of the Consent Decree referenced in Permit Condition I.A.

IV.K. REQUEST FOR PERMIT MODIFICATIONS

If the Permittee or the Executive Director determines the detection monitoring program no longer satisfies the requirements of the regulations, the Permittee must, within 90 days of the determination, submit an application for a permit modification to make any appropriate changes to the program which will satisfy the regulations.

## **MODULE V – CORRECTIVE ACTION FOR REGULATED UNITS**

Corrective Action and corrective action/compliance groundwater monitoring shall be governed by the requirements of the *Consent Decree* referenced in Permit Condition I.A.



## **MODULE VI – LAND DISPOSAL RESTRICTIONS**

### **VI.A. GENERAL RESTRICTIONS**

MHWMR Rule 1.15 Part 268 identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances which an otherwise prohibited waste may continue to be placed on or in a land treatment, storage or disposal unit. The Permittee shall maintain compliance with the requirements of MHWMR Rule 1.15 Part 268. Where the Permittee has applied for an extension, waiver or variance under MHWMR Rule 1.15 Part 268, the Permittee shall comply with all restrictions on land disposal under this Module once the effective date for the waste has been reached pending final approval of such application.

### **VI.B. LAND DISPOSAL PROHIBITIONS AND TREATMENT STANDARDS**

- VI.B.1. A restricted waste identified in MHWMR Rule 1.15 Part 268, Subpart C shall not be placed in a land disposal unit without further treatment unless the requirements of MHWMR Rule 1.15 Part 268, Subparts C and/or D are met.
- VI.B.2. The storage of hazardous wastes restricted from land disposal under MHWMR Rule 1.15 Part 268 is prohibited unless the requirements of MHWMR Rule 1.15 Part 268, Subpart E are met.



## **MODULE VII – ORGANIC AIR EMISSIONS REQUIREMENTS OF PROCESS VENT AND EQUIPMENT LEAKS**

### **VII.A. GENERAL INTRODUCTION**

In the June 21, 1990, Federal Register, EPA published the final rule for Phase I Organic Air Emission Standards (40 CFR Parts 264 and 265, Subparts AA and BB) for hazardous waste treatment, storage, and disposal facilities. Phase II Organic Air Emission Standards (40 CFR Parts 264 and 265, Subpart CC) was published in the Federal Register on December 6, 1994. The State of Mississippi adopted Subparts AA and BB in September 1990 and Subpart CC in December 2000. Subpart AA contains emission standards for process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations that process hazardous waste with an annual average total organic concentration of at least ten (10) parts per million (ppm) by weight. Subpart BB contains emission standards that address leaks from specific equipment (i.e. pumps, valves, compressors, etc.) that contains or contacts hazardous waste that has an organic concentration of at least ten (10) percent by weight. Subpart CC contains emissions standards for tanks, surface impoundments, or containers for which all hazardous waste entering a unit has an average volatile organic concentration at the point of waste origination greater than 500 parts per million (ppm) by weight.

### **VII.B. ORGANIC AIR EMISSION STANDARDS**

Prior to constructing any equipment with process vents subject to the requirements of MHWMR Rule 1.7 Part 264, Subpart AA, or installing any additional equipment subject to the requirements of MHWMR Rule 1.7 Part 264, Subpart BB, or installing any tanks, surface impoundments, and containers subject to the requirements of MHWMR Rule 1.7 Part 264, Subpart CC, the Permittee shall supply the specific Part B information required pursuant to MHWMR Rule 1.16 Part 270.24, Part 270.25, and Part 270.27, as applicable.



## MODULE VIII – WASTE MINIMIZATION

### VIII.A. APPLICABILITY

In accordance with MHWMR Rule 1.7 Part 264.73(b)(9); Section 3005(h) of RCRA, 42 U.S.C. 6925(h); and Section 49-31-1 *et seq.*, Mississippi Code of 1972; the Permittee must certify to the Department, at least annually, that:

- VIII.A.1. The Permittee has a waste minimization program in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the Permittee to be economically practicable; and
- VIII.A.2. The proposed method of treatment, storage, or disposal is the most practical method available to the Permittee that minimizes the present and future threat to human health and the environment.

### VIII.B. WASTE MINIMIZATION CERTIFICATION OBJECTIVES

The Permittee shall ensure that any future waste minimization program under Condition VIII.A. will include the following elements:

#### VIII.B.1. Top Management Support

- a. A dated and signed policy describing management support for waste minimization and for implementation of a waste minimization plan.
- b. Description of employee awareness and training programs designed to involve employees in waste minimization planning and implementation to the maximum extent feasible.
- c. Description of how the waste minimization plan has been incorporated into management practices so as to ensure ongoing efforts with respect to product design, capital planning, production operations and maintenance.

#### VIII.B.2. Characterization of Waste Generation

Identification of the types, amounts and the hazardous constituents of waste streams with the sources and frequencies of generation.

#### VIII.B.3. Periodic Waste Minimization Assessments

- a. Identification of all points in a process where materials can be prevented from becoming a waste, or can be recycled.
- b. Identification of potential waste reduction and recycling techniques applicable to each waste, with a cost estimate for capital investment and implementation.

- c. Specific performance goals, preferably quantitative, for the source reduction of waste by stream. Whenever possible, goals should be stated as weight of waste generated per standard unit of production, as defined by the Permittee.

VIII.B.4. Cost Allocation System

- a. Identification of waste management costs for each waste, factoring in liability, transportation, recordkeeping, personnel, pollution control, treatment, disposal, compliance and oversight to the extent feasible.
- b. Description of how departments or areas of the facility are held accountable for the wastes they generate.
- c. Comparison of waste management costs with costs of potential reduction and recycling techniques applicable to each waste.

VIII.B.5. Technology Transfer

Description of efforts to seek and exchange technical information on waste minimization from other parts of the company, other firms, trade associations, technical assistance programs, and professional consultants.

VIII.B.6. Program Evaluation

The Permittee shall ensure the waste minimization plan includes ongoing program evaluation that includes the following components:

- a. Identification of the types and amounts of hazardous waste and other wastes reduced or recycled.
- b. Analysis and quantification of progress made relative to each performance goal established and each reduction technique implemented.
- c. Changes or amendments made to the waste minimization plan and explanation.
- d. Explanation and documentation of reduction efforts completed or in progress before development of the waste minimization plan.
- e. Explanation and documentation regarding impediments to hazardous waste reduction specific to the individual facility.

VIII.C. RECORDKEEPING AND REPORTING

- VIII.C.1. The Permittee shall submit a certification report to the Department annually of the types and quantities of waste generated, and the types and quantities of waste reduced/minimized. This certified report shall include a narrative study explaining the waste generated and the relevant minimization data, a description of goals and progress made in reducing/minimizing the generation of wastes, and a description of any impediment to the reduction and minimization of waste.
- VIII.C.2. The Permittee shall maintain copies of this certification in the facility operating record as required by MHWMR Rule 1.7 Part 264.73.
- VIII.C.3. This narrative report requirement of this section is satisfied through meeting the large quantity generator requirements for annual hazardous waste reports, hazardous waste contingency plan, waste manifest, and routine inspections.



# **ATTACHMENT A**

## **RCRA HAZARDOUS WASTE PERMIT APPLICATION PART A**

<p><b>SEND COMPLETED FORM TO:</b> The Appropriate State or Regional Office.</p>	<p>United States Environmental Protection Agency <b>RCRA SUBTITLE C SITE IDENTIFICATION FORM</b></p>	
<p><b>1. Reason for Submittal</b></p> <p>MARK ALL BOX(ES) THAT APPLY</p>	<p><b>Reason for Submittal:</b></p> <p><input type="checkbox"/> To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location)</p> <p><input type="checkbox"/> To provide a Subsequent Notification (to update site identification information for this location)</p> <p><input type="checkbox"/> As a component of a First RCRA Hazardous Waste Part A Permit Application</p> <p><input type="checkbox"/> As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # _____)</p> <p><input type="checkbox"/> As a component of the Hazardous Waste Report (If marked, see sub-bullet below)</p> <p style="margin-left: 20px;"><input type="checkbox"/> Site was a TSD facility and/or generator of &gt;1,000 kg of hazardous waste, &gt;1 kg of acute hazardous waste, or &gt;100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)</p>	
<p><b>2. Site EPA ID Number</b></p>	<p>EPA ID Number <input type="text"/> <input type="text"/></p>	
<p><b>3. Site Name</b></p>	<p>Name: <input type="text"/></p>	
<p><b>4. Site Location Information</b></p>	<p>Street Address: <input type="text"/></p>	
	<p>City, Town, or Village: <input type="text"/></p>	<p>County: <input type="text"/></p>
	<p>State: <input type="text"/></p>	<p>Country: <input type="text"/></p>
<p><b>5. Site Land Type</b></p>	<p><input type="checkbox"/> Private   <input type="checkbox"/> County   <input type="checkbox"/> District   <input type="checkbox"/> Federal   <input type="checkbox"/> Tribal   <input type="checkbox"/> Municipal   <input type="checkbox"/> State   <input type="checkbox"/> Other</p>	
<p><b>6. NAICS Code(s) for the Site (at least 5-digit codes)</b></p>	<p>A. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>	<p>C. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>
	<p>B. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>	<p>D. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>
<p><b>7. Site Mailing Address</b></p>	<p>Street or P.O. Box: <input type="text"/></p>	
	<p>City, Town, or Village: <input type="text"/></p>	
	<p>State: <input type="text"/></p>	<p>Country: <input type="text"/></p>
<p><b>8. Site Contact Person</b></p>	<p>First Name: <input type="text"/></p>	<p>MI: <input type="text"/></p>
	<p>Last: <input type="text"/></p>	
	<p>Title: <input type="text"/></p>	
	<p>Street or P.O. Box: <input type="text"/></p>	
	<p>City, Town or Village: <input type="text"/></p>	
	<p>State: <input type="text"/></p>	<p>Country: <input type="text"/></p>
	<p>Zip Code: <input type="text"/></p>	<p>Email: <input type="text"/></p>
<p><b>9. Legal Owner and Operator of the Site</b></p>	<p>A. Name of Site's Legal Owner: <input type="text"/></p>	
	<p>Date Became Owner: <input type="text"/></p>	
	<p>Owner Type: <input type="checkbox"/> Private   <input type="checkbox"/> County   <input type="checkbox"/> District   <input type="checkbox"/> Federal   <input type="checkbox"/> Tribal   <input type="checkbox"/> Municipal   <input type="checkbox"/> State   <input type="checkbox"/> Other</p>	
	<p>Street or P.O. Box: <input type="text"/></p>	
	<p>City, Town, or Village: <input type="text"/></p>	
	<p>State: <input type="text"/></p>	<p>Country: <input type="text"/></p>
	<p>Phone: <input type="text"/></p>	<p>Zip Code: <input type="text"/></p>
<p>B. Name of Site's Operator: <input type="text"/></p>		
<p>Date Became Operator: <input type="text"/></p>		
<p>Operator Type: <input type="checkbox"/> Private   <input type="checkbox"/> County   <input type="checkbox"/> District   <input type="checkbox"/> Federal   <input type="checkbox"/> Tribal   <input type="checkbox"/> Municipal   <input type="checkbox"/> State   <input type="checkbox"/> Other</p>		

**10. Type of Regulated Waste Activity (at your site)**

Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

**A. Hazardous Waste Activities; Complete all parts 1-10.**

- Y  N  **1. Generator of Hazardous Waste**  
 If "Yes," mark only one of the following – a, b, or c.
- a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs/mo.) or more of hazardous waste; or Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs/mo) of acute hazardous waste; or Generates, in any calendar month, or accumulates at any time, more than 100 kg/mo (220 lbs/mo) of acute hazardous spill cleanup material.
- b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs/mo) of non-acute hazardous waste.
- c. CESQG: Less than 100 kg/mo (220 lbs/mo) of non-acute hazardous waste.
- If "Yes" above, indicate other generator activities in 2-10.

- Y  N  **2. Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes," provide an explanation in the Comments section.
- Y  N  **3. United States Importer of Hazardous Waste**
- Y  N  **4. Mixed Waste (hazardous and radioactive) Generator**

- Y  N  **5. Transporter of Hazardous Waste**  
 If "Yes," mark all that apply.
- a. Transporter
- b. Transfer Facility (at your site)
- Y  N  **6. Treater, Storer, or Disposer of Hazardous Waste** Note: A hazardous waste Part B permit is required for these activities.
- Y  N  **7. Recycler of Hazardous Waste**
- Y  N  **8. Exempt Boiler and/or Industrial Furnace**  
 If "Yes," mark all that apply.
- a. Small Quantity On-site Burner Exemption
- b. Smelting, Melting, and Refining Furnace Exemption
- Y  N  **9. Underground Injection Control**
- Y  N  **10. Receives Hazardous Waste from Off-site**

**B. Universal Waste Activities; Complete all parts 1-2.**

- Y  N  **1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes," mark all that apply.**
- a. Batteries
- b. Pesticides
- c. Mercury containing equipment
- d. Lamps
- e. Other (specify) \_\_\_\_\_
- f. Other (specify) \_\_\_\_\_
- g. Other (specify) \_\_\_\_\_
- Y  N  **2. Destination Facility for Universal Waste**  
 Note: A hazardous waste permit may be required for this activity.

**C. Used Oil Activities; Complete all parts 1-4.**

- Y  N  **1. Used Oil Transporter**  
 If "Yes," mark all that apply.
- a. Transporter
- b. Transfer Facility (at your site)
- Y  N  **2. Used Oil Processor and/or Re-refiner**  
 If "Yes," mark all that apply.
- a. Processor
- b. Re-refiner
- Y  N  **3. Off-Specification Used Oil Burner**
- Y  N  **4. Used Oil Fuel Marketer**  
 If "Yes," mark all that apply.
- a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
- b. Marketer Who First Claims the Used Oil Meets the Specifications

**D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K**

❖ You can ONLY Opt into Subpart K if:

- you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
- you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y  N  1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories  
**See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:**

- a. College or University
- b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university
- c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Y  N  2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

**11. Description of Hazardous Waste**

**A. Waste Codes for Federally Regulated Hazardous Wastes.** Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.


**B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes.** Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.


**12. Notification of Hazardous Secondary Material (HSM) Activity**

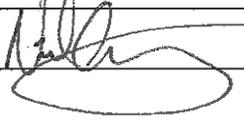
Y  N  Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

**13. Comments**

All RCRA regulated units have been closed. This Part A is being submitted as part of a RCRA Post Closure Permit renewal application.

**14. Certification.** 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 fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Neil Carr, Vice President Rohm and Haas Chemicals LLC	11/21/2016

## ADDENDUM TO THE SITE IDENTIFICATION FORM: NOTIFICATION OF HAZARDOUS SECONDARY MATERIAL ACTIVITY



**ONLY fill out this form if:**

- ❖ You are located in a State that allows you to manage excluded hazardous secondary material (HSM) under 40 CFR 261.2(a)(2)(ii), 261.4(a)(23), (24), or (25) (or state equivalent). See <http://www.epa.gov/epawaste/hazard/dsw/statespf.htm> for a list of eligible states; **AND**
- ❖ You are or will be managing excluded HSM in compliance with 40 CFR 261.2(a)(2)(ii), 261.4(a)(23), (24), or (25) (or state equivalent) or you have stopped managing excluded HSM in compliance with the exclusion(s) and do not expect to manage any amount of excluded HSM under the exclusion(s) for at least one year. Do not include any information regarding your hazardous waste activities in this section.

**1. Indicate reason for notification. Include dates where requested.**

- Facility will begin managing excluded HSM as of \_\_\_\_\_ (mm/dd/yyyy).
- Facility is still managing excluded HSM/re-notifying as required by March 1 of each even-numbered year.
- Facility has stopped managing excluded HSM as of \_\_\_\_\_ (mm/dd/yyyy) and is notifying as required.

**2. Description of excluded HSM activity.** Please list the appropriate codes and quantities in **short tons** to describe your excluded HSM activity ONLY (do not include any information regarding your hazardous wastes). Use additional pages if more space is needed.

a. Facility code (answer using codes listed in the Code List section of the instructions)	b. Waste code(s) for HSM	c. Estimated short tons of excluded HSM to be managed annually	d. Actual short tons of excluded HSM that was managed during the most recent odd-numbered year	e. Land-based unit code (answer using codes listed in the Code List section of the instructions)

**3. Facility has financial assurance pursuant to 40 CFR 261.4(a)(24)(vi).** (Financial assurance is required for reclaimers and intermediate facilities managing excluded HSM under 40 CFR 261.4(a)(24) and (25))

Y  N  Does this facility have financial assurance pursuant to 40 CFR 261.4(a)(24)(vi)?

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**HAZARDOUS WASTE PERMIT INFORMATION FORM**

November 22, 2016

2

Post Closure Permit Application  
**Rohm and Haas Chemicals LLC**  
Moss Point, Mississippi



**7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3**

- A. PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For “other” processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.
- B. PROCESS DESIGN CAPACITY** – For each code entered in Item 7.A; enter the capacity of the process.
1. **AMOUNT** – Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.
  2. **UNIT OF MEASURE** – For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.
- C. PROCESS TOTAL NUMBER OF UNITS** – Enter the total number of units for each corresponding process code.

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity	Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
<b>Disposal</b>			<b>Treatment (Continued)</b>		
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day	T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour
D80	Landfill	Acre-feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards	T82	Lime Kiln	
D81	Land Treatment	Acres or Hectares	T83	Aggregate Kiln	
D82	Ocean Disposal	Gallons Per Day or Liters Per Day	T84	Phosphate Kiln	
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards	T85	Coke Oven	
D99	Other Disposal	Any Unit of Measure Listed Below	T86	Blast Furnace	
<b>Storage</b>			T87	Smelting, Melting, or Refining Furnace	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards	T88	Titanium Dioxide Chloride Oxidation Reactor	
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards	T89	Methane Reforming Furnace	
S03	Waste Pile	Cubic Yards or Cubic Meters	T90	Pulping Liquor Recovery Furnace	
S04	Surface Impoundment	Gallons; Liters; Cubic Meters; or Cubic Yards	T91	Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid	
S05	Drip Pad	Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards	T92	Halogen Acid Furnaces	
S06	Containment Building Storage	Cubic Yards or Cubic Meters	T93	Other Industrial Furnaces Listed in 40 CFR 260.10	
S99	Other Storage	Any Unit of Measure Listed Below	T94	Containment Building Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTU Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million BTU Per Hour
<b>Treatment</b>			<b>Miscellaneous (Subpart X)</b>		
T01	Tank Treatment	Gallons Per Day; Liters Per Day	X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
T02	Surface Impoundment	Gallons Per Day; Liters Per Day	X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Hour; or Million BTU Per Hour	X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; or Million BTU Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour	X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour	X99	Other Subpart X	Any Unit of Measure Listed Below

Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code
Gallons .....	G	Short Tons Per Hour .....	D
Gallons Per Hour .....	E	Short Tons Per Day .....	N
Gallons Per Day .....	U	Metric Tons Per Hour .....	W
Liters .....	L	Metric Tons Per Day .....	S
Liters Per Hour .....	H	Pounds Per Hour .....	J
Liters Per Day .....	V	Kilograms Per Hour .....	X
		Million BTU Per Hour .....	X
		Cubic Yards .....	Y
		Cubic Meters .....	C
		Acres .....	B
		Acre-feet .....	A
		Hectares .....	Q
		Hectare-meter .....	F
		BTU Per Hour .....	I



**9. Description of Hazardous Wastes - Enter Information in the Sections on Form Page 5**

- A. EPA HAZARDOUS WASTE NUMBER** – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.
- B. ESTIMATED ANNUAL QUANTITY** – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.
- C. UNIT OF MEASURE** – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

**D. PROCESSES**

**1. PROCESS CODES:**

**For listed hazardous waste:** For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

**For non-listed waste:** For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

**NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:**

1. Enter the first two as described above.
2. Enter "000" in the extreme right box of Item 9.D(1).
3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.

**2. PROCESS DESCRIPTION:** If code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

**NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER** – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.
2. In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

**EXAMPLE FOR COMPLETING Item 9** (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number	A. EPA Hazardous Waste No. (Enter code)					B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES														
	(1) PROCESS CODES (Enter Code)										(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))											
X	1	K	0	5	4	900	P	T	0	3	D	8	0									
X	2	D	0	0	2	400	P	T	0	3	D	8	0									
X	3	D	0	0	1	100	P	T	0	3	D	8	0									
X	4	D	0	0	2																	Included With Above

9. Description of Hazardous Wastes (Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)													
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
				(1) PROCESS CODES (Enter Code)					(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))				
1													
2													
3													
4													
5													
6													
7													
8													
9													
1	0												
1	1												
1	2												
1	3												
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2	7												
2	8												
2	9												
3	0												
3	1												
3	2												
3	3												
3	4												
3	5												
3	6												







# ATTACHMENT B

## FACILITY DESCRIPTION

### General Facility Description

- Figure 1 7.5 Minute Topo Map with Site Features and 1 Mile Buffer Zone
- Figure 2 Flood Zone Map
- Figure 3 Surrounding Land Use Map
- Figure 4 Facility Layout
- Figure 5 Facility Drainage and Runoff Controls
- Figure 6 Sanitary Sewer Systems
- Figure 7 Injection and Withdrawal Wells within a 2 Mile Radius of the Site

## INTRODUCTION

A former chemical manufacturing facility in Jackson County, Mississippi within the corporate limits of the City of Moss Point is currently owned and managed by Rohm and Haas Chemicals LLC. The facility began operations in 1952 as the Thiokol Corporation and later as Morton Thiokol, then Morton International, Inc., prior to becoming part of Rohm and Haas. Rohm and Haas was acquired by and is currently a subsidiary of The Dow Chemical Company. The legal entity owning the property and liabilities, including obligations of Morton, associated with the site is Rohm and Haas Chemicals LLC, which will be referred to simply as “Rohm and Haas” throughout this application. The facility originally manufactured polysulfide rubber. It later added adhesives, sealants and other specialty chemical manufacturing to the operations. It ceased operations in 2001, and manufacturing buildings and equipment have been demolished. The Phase I Investigation/Phase II Workplan Report (GSI, 2002) and succeeding investigation reports grouped the former manufacturing processes at the Facility into the nine areas described below.

1. **Formal Area:** Formal, also known as bis(2-chloroethoxy)methane, was used as a chemical feedstock in the production of polysulfide rubber. The Formal and Polysulfide Areas (see below) comprise the two oldest production areas at the Facility; both began operation in 1952. The formal production process involved: 1) the reaction of ethylene oxide and anhydrous HCl (hydrochloric acid) to produce 2-chlorethanol (also known as chloro); and 2) the reaction of chloro and 50% formaldehyde under acidic conditions to produce formal.

2. **Polysulfide Area:** The Polysulfide Area began operation in 1952. Polysulfide is a commercial synthetic rubber. Processes conducted within the Polysulfide Area included the production of: 1) sodium polysulfide (also referred to as “poly”, and formed by combining caustic soda and molten sulfur); 2) liquid polysulfide polymers (also referred to as “LP”); and 3) solid polysulfide rubber products (also referred to as “FA/ST”).

3. **Monomer Area:** The monomer production unit was constructed in the mid 1970s. The unit utilized hydrogen sulfide as a feedstock in the production of various chemicals, including 2-mercaptoethanol and thiodiglycol. The area consisted of various vessels, recovery devices, storage tanks, and other components that were configured to complete a wide variety of batch reactions.

4. **Inorganics Area:** Construction of the Inorganics Area occurred in the early 1990s. The unit was constructed for the purpose of producing feedstocks (e.g., hydrogen sulfide) that had historically been purchased.

5. **Urethane/IG Sealants Area:** The urethane production facilities were constructed in the mid 1970s and the area consisted of various vessels, recovery devices, storage tanks, and other components that were configured to complete a wide variety of batch reactions.

6. **HC Area:** The HC (Hydrocarbon) Area was the site of periodic batch production of polybutadiene rubber, and began operation in the early 1960s. The area operated approximately three to six months of the year.

7. **Adhesives Area:** The Adhesives Area began operation in 1997, and consisted of a series of batch reaction vessels for the production of urethanes, acrylic polyesters, and water-based polymer adhesives.

8. **Ecology Center:** The Ecology Center was not a process unit, but rather, a central wastewater treatment unit that received process wastewater and contact stormwater from the various production areas. Within the Ecology Center, wastewater was neutralized, clarified, and filtered prior to deep well injection. The process wastewater handled by the Ecology Center was a mixture of several different waste streams, including acid wash from formal production, ammonia wash from formal production, alkaline (caustic) wash from polysulfide manufacturing, F039 multisource leachate from the Hazardous Waste Landfill, process wastewater from Electronic Materials processes, and stormwater.

9. **Electronic Materials:** The Electronic Materials area was operated under separate management from the Specialty Chemicals manufacturing units and had its own EPA ID number. It began operation in 1982 and closed in 2004. The Electronic Materials area produced resins, polymers, and water-based solutions using a series of batch reactor trains. Post closure care is not required for the 39.72-acre Electronic Materials parcel, which contains no regulated waste management units. This parcel, formerly operated by Rohm and Haas Electronic Materials, f/k/a Shipley Company, has been sold to a third party, and is now operated by Omega Protein. By letter dated December 8, 2004, the United States Environmental Protection Agency issued a no further action decision, in which the Mississippi Department of Environmental Quality concurred, stating that based on soils and groundwater investigation at the site, no further corrective action is required. A copy of this letter is provided in Appendix D.

The primary regulated waste management units at the site consist of a closed hazardous waste landfill, two former lagoon systems used to settle out solids from wastewater prior to discharge (T-Lagoon and V-Lagoon), and the Ecology Center, which was the wastewater treatment plant for the facility and serves today as a groundwater treatment plant. In addition, the site injected wastes through three deep injection wells which have also been closed. Two of injection wells (UIC#1 and UIC#3) were closed in 2002 and UIC#2 was closed in 1994 prior to Rohm and Haas acquiring the Site.

Rohm and Haas has been conducting an environmental investigation of its property pursuant to a Consent Decree captioned United States of America and the State of Mississippi v. Morton International, Inc., C.A. No. 1:CV501BrB (“Consent Decree”), entered January 11, 2001, which incorporates the provisions of a RCRA Section 3013 Administrative Order (“3013 Order”) issued by U.S. EPA Region 4 on April 9, 1994. The RCRA 3013 Order required Morton to conduct a comprehensive site evaluation. A site evaluation program has been implemented at the

Facility together with interim remedial measures. Interim remedial measures continue with the operation of a 29 recovery well system designed to contain and recover on-site the identified organic groundwater plume emanating from the former Formal Process Area and other areas of the Site. Recovered groundwater is treated before discharge to the local publicly owned treatment works for final treatment. Site evaluation work has now been performed with the completion of numerous subsurface investigations and reports. The most recent and comprehensive has been completion of Phases I, II, III and IV of the Additional Conceptual Site Model (CSM) Investigation, which is summarized in detail in the June 1, 2015 *Phase IV Additional CSM Investigation Report*. As a result, Site hot spot source areas and potential migration pathways are better understood and delineated. Treatability studies for active remediation of the Formal and T-Lagoon areas are currently underway.

Rohm and Haas is obligated under the current Hazardous Waste Management Permit and RCRA 3013 Order requirements of the Consent Decree for this Facility to conduct groundwater monitoring (see below for more detail discussion). Since August 2001, Rohm and Haas has submitted semi-annual groundwater monitoring reports pursuant to the Consent Decree; prior to that time, the semi-annual reports had been submitted pursuant to the RCRA Permit and RCRA 3013 Order requirements then in effect. Twenty-nine semi-annual reports have now been submitted.

A newly revised groundwater monitoring plan (*Revised Groundwater Monitoring Plan*, Parsons, August 2, 2016) was recently submitted and approved by the EPA September 28, 2016. The purpose of the monitoring program and associated reports is to keep track of Site groundwater conditions and present results of the groundwater sampling performed at the Facility. The Site groundwater sampling program has now been on-going for many years and currently includes 179 monitoring and recovery wells. This monitoring work has yielded a tremendous amount of groundwater data for review and trend/spatial analysis. Groundwater monitoring will continue as required under the approved groundwater monitoring plan, with reporting occurring on an annual basis going forward.

The four upper-most water-bearing units beneath the Facility are, in order of increasing depth, the Alluvial Aquifer, the Upper Citronelle Aquifer, the Lower Citronelle Aquifer, and the Graham Ferry Aquifer. Each is described in detail in Section 2 of the *Phase I Investigation Report/Phase II Workplan* (GSI, 2003) included in this document as Appendix F, Attachment 1.

As of July 2016, the total number of monitoring wells installed by Rohm and Haas at or in the vicinity of the Facility was 179 (29 of which are subject to this permit), distributed as follows:

Aquifer	No. of Monitoring Wells
Alluvial Aquifer	82
Upper Citronelle Aquifer	49
Lower Citronelle Aquifer	44

Graham Ferry Aquifer	4
<b>Total</b>	<b>179</b>

There are currently 12 recovery wells and 70 monitoring wells within the Alluvial Aquifer. These include five permitted hazardous waste landfill leak detection wells. Recovery wells are located in the Formal area (ARW-1, ARW-2, ARW-3, ARW-4 and ARW-5), the closed T-Lagoon area (TAR-1, TAR-2, TAR-3 and TAR-4) and the closed V-Lagoon area (VAR-1, VAR-2 and VAR-3). Most Site contamination is located within the Formal area at the southern portion of the Site and by far the most mass removal is taking place there. A much smaller and low concentration volatile organic compound (VOC) plume associated with a former drum storage area is located in the northern area of the Site at the southeast corner of the T-Lagoon. Alluvial Aquifer monitoring and recovery wells are focused on these areas and the former V-Lagoon, which no longer appears to be a significant on-going source.

There are currently six recovery wells [five in or near the Formal area (UCRW-1, UCRW-2, UCRW-3, UCRW-4 and UCRW-5) and one at the former V-Lagoon (VUCR-1R)] and 43 monitoring wells in the Upper Citronelle Aquifer. The recovery and monitoring wells are focused on monitoring and controlling the extent and concentrations of a COC plume centering on the Formal area and extending southeastward toward the Escatawpa River. Migration of COCs toward the River has been successfully controlled and the numerous monitoring wells provide a more than necessary monitoring well network. However, pumping from recovery well VUCR-1R may be resulting in migration of the COC plume northwesterly toward the V-Lagoon area and pumping may be reduced or halted in the future to avoid this issue. A second low concentration COC plume in the Upper Citronelle Aquifer located at the southeastern corner of the T-Lagoon, which is sourced from the same former drum storage location discussed in the Alluvial Aquifer discussion above, is also monitored.

There are currently 10 recovery wells (LCRW-1, LCRW-2, LCRW-3, LCRW-4, LCRW-5, LCRW-6, LCRW-7, LCRW-8, LCRW-9 and LCRW-10; MW-123 was converted to a recovery well in August 2015 and designated LCRW-10) and 34 monitoring wells currently in existence in the Lower Citronelle Aquifer. Both monitoring and recovery wells in the Lower Citronelle Aquifer are more spread out due to a lower concentration but larger and more elongated shape COC plume within this aquifer. The COC plume in this aquifer appears to be sourced from within and just to the east of the Formal area, and it extends both to the northeast off-site and northwest toward and beyond the former V-Lagoon.

Four monitoring wells are located within the unaffected Graham Ferry Aquifer. One monitoring well is located up-gradient of and three down-gradient of the Formal area.

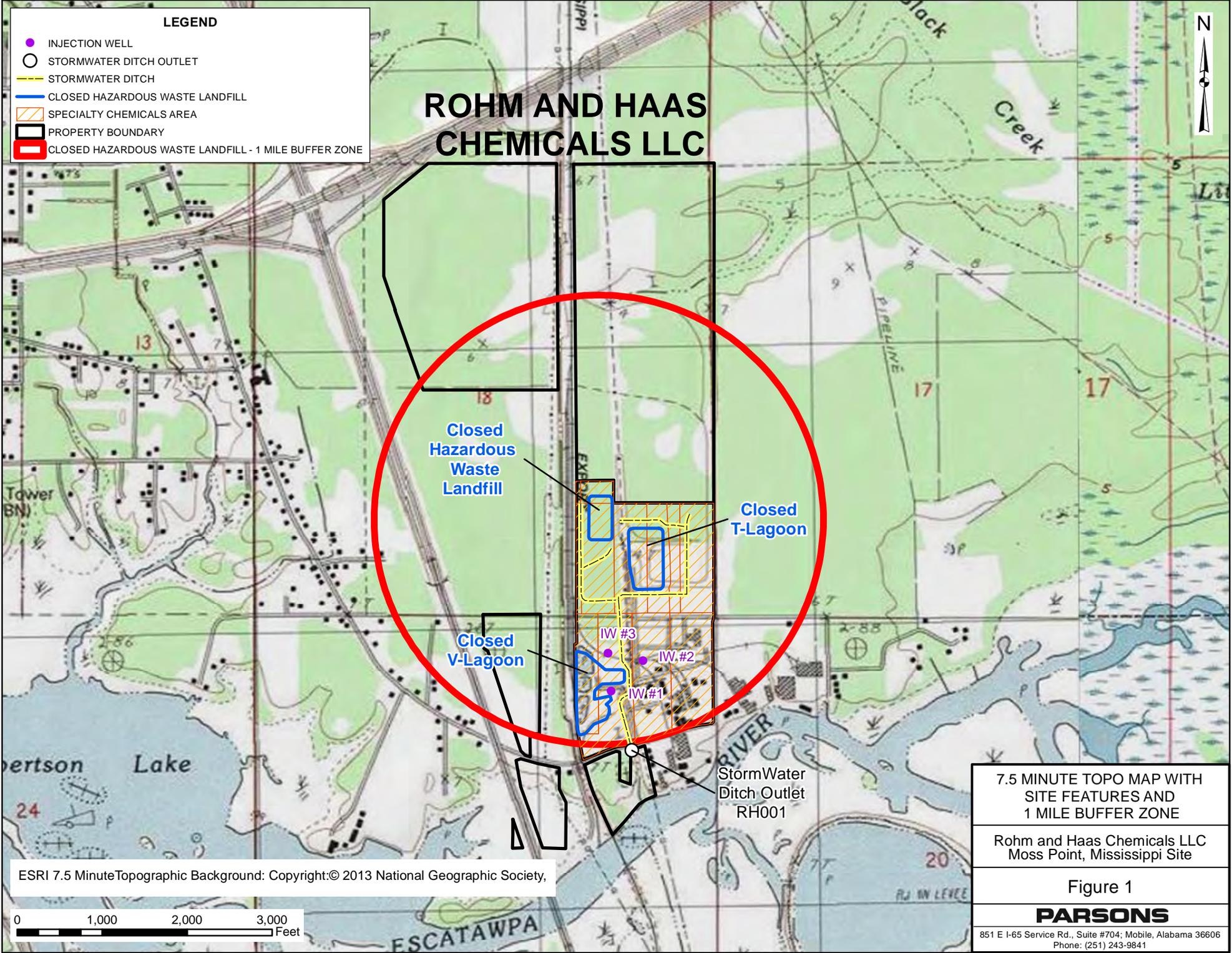
Rohm and Haas is submitting this Post-Closure Permit Application Renewal for the closed Moss Point, Mississippi facility. The requirements for this application are described in Mississippi Hazardous Waste Management Regulations (MHWMR) Part 270. In October 1998, the U.S. Environmental Protection Agency (USEPA) issued additional guidance for the preparation of post-closure permits for facilities. This guidance outlined the specific requirements for the preparation of Post-Closure Permit applications and was finalized on October 22, 1998. This application has been prepared in accordance with this guidance and in

accordance with MHWMR §§270.28. The information required for this permit application is specifically identified in §§270.14(b)(1), (4), (5), (6), (11), (13), (14), (16), (18), and (19), (c), and (d). All regulations cited in this document refer to MHWMR unless specifically identified otherwise.

If owners and operators of Hazardous Waste Management (HWM) facilities can demonstrate that the information prescribed in Part B cannot be provided to the extent required, the Director may make allowance for submission of such information on a case-by-case basis. Information required in Part B shall be submitted to the Director and signed in accordance with requirements in §270.11. Certain technical data, such as design drawings and specifications, and engineering studies shall be certified by a registered professional engineer. This application renewal is being submitted in accordance with these requirements.

# ROHM AND HAAS CHEMICALS LLC

- LEGEND**
- INJECTION WELL
  - STORMWATER DITCH OUTLET
  - STORMWATER DITCH
  - CLOSED HAZARDOUS WASTE LANDFILL
  - SPECIALTY CHEMICALS AREA
  - PROPERTY BOUNDARY
  - CLOSED HAZARDOUS WASTE LANDFILL - 1 MILE BUFFER ZONE

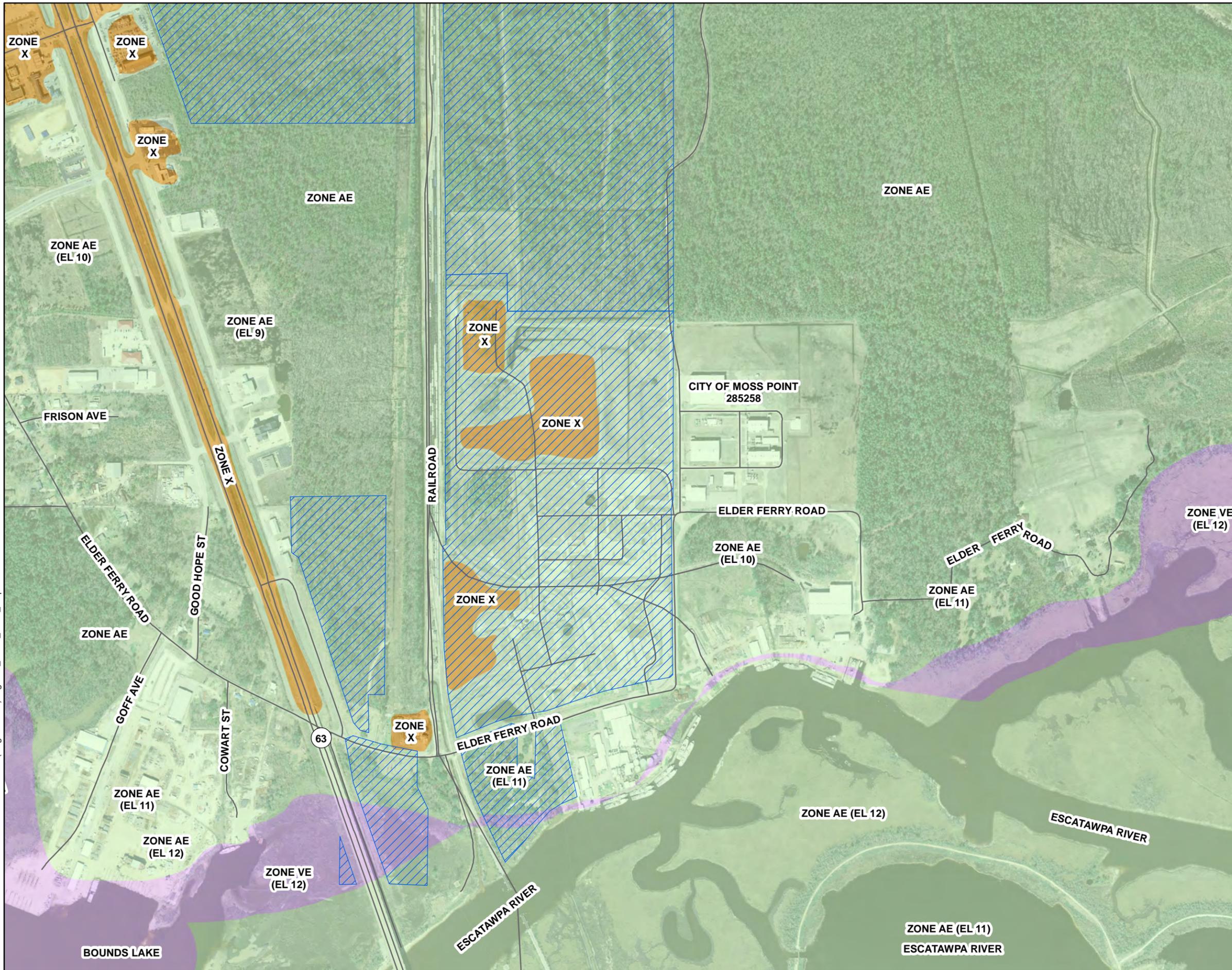


ESRI 7.5 Minute Topographic Background: Copyright: © 2013 National Geographic Society,



7.5 MINUTE TOPO MAP WITH SITE FEATURES AND 1 MILE BUFFER ZONE
Rohm and Haas Chemicals LLC Moss Point, Mississippi Site
Figure 1
<b>PARSONS</b>
851 E I-65 Service Rd., Suite #704; Mobile, Alabama 36606 Phone: (251) 243-9841

Path: F:\GIS\Moss Point\MXD\2016 RCRA Permit (August 2016)\Figure1\_Topo\_Map\_1Mile.mxd



**Legend**

- ROADS/TRANSPORTATION
- ROHM AND HAAS PROPERTY

**FLOOD ZONE AREA:**

- ZONE AE
- ZONE VE
- ZONE X

ZONE AE = The flood insurance rate zone that corresponds to the 1% annual chance floodplains.  
 ZONE VE = The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves.  
 ZONE X = Areas of 0.2% annual chance flood hazards.

NOTES:  
 1. SEE 28059C0342G FIRM MAP FOR DETAILED SPECIFICS.



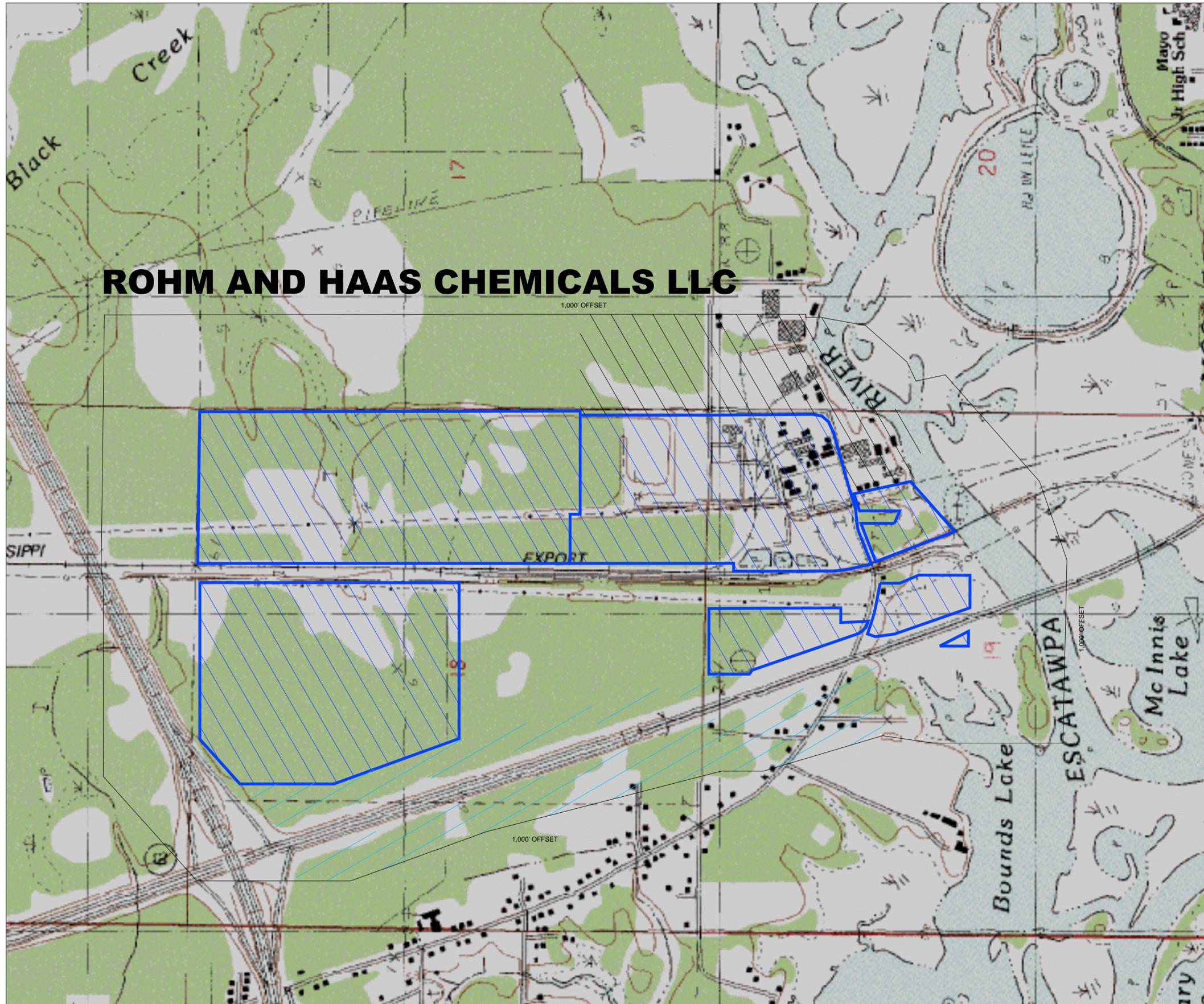
SCALE: 1" = 500'

**PARSONS**

Rohm and Haas Chemicals LLC  
 Moss Point, Mississippi Site

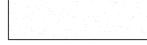
FLOOD ZONE MAP

FIGURE 2



# ROHM AND HAAS CHEMICALS LLC



-  INDUSTRIAL USE
-  RESIDENTIAL/COMMERCIAL USE
-  UNDEVELOPED
-  MORTON PROPERTY
-  PROPERTY BOUNDARY

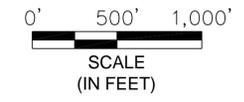


FIGURE 3  
SURROUNDING LAND USE MAP  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MS

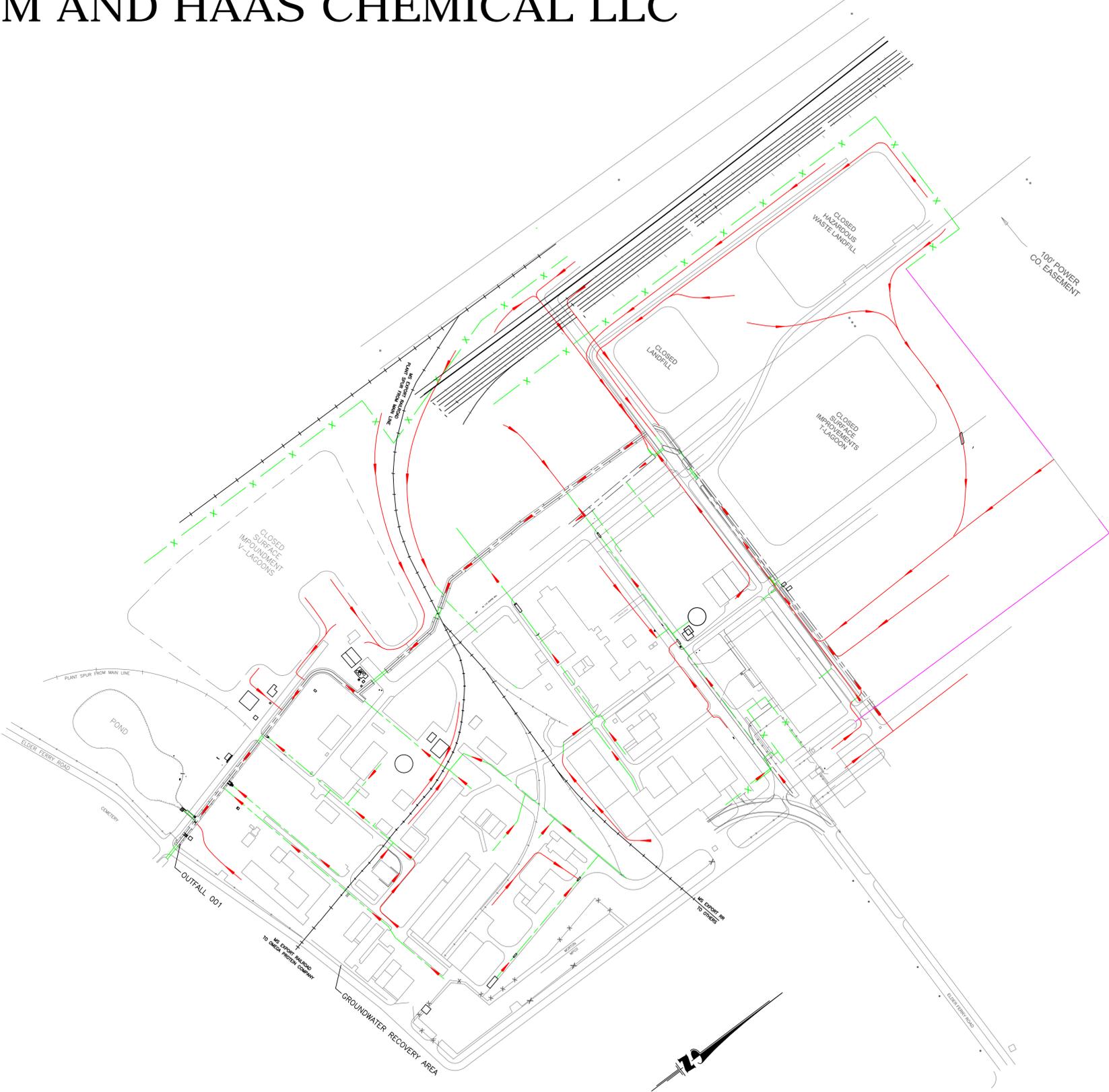
CREATED: 4/28/05  
REVISED: 7/19/2016

**REFERENCE**  
BASE MAP TAKEN FROM U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAPS, PASCAGOULA NORTH, MISS. PROVISIONAL EDI110N 1982; PASCAGOULA SOUTH, MISS. PROVISIONAL EDITION 1982; KREOLE, MISS.-ALA. 1958 PHOTOREVISED 1986; GRAND BAY SW, MISS.-ALA. 1958-PHOTOREVISED 1977.





# ROHM AND HAAS CHEMICAL LLC



- DRAINAGE DITCH
- DRAINAGE PIPE
- > DRAINAGE FLOW DIRECTION

**FIGURE 5**  
**FACILITY DRAINAGE AND**  
**RUNOFF CONTROLS**  
**ROHM AND HAAS CHEMICAL LLC**  
**MOSS POINT, MS**

0'    200'    400'  
 SCALE (IN FEET)

**PARSONS**

CREATED 4/28/2005 REVISED 11/9/2016

# ROHM AND HAAS CHEMICALS LLC



Note: Figure shows former locations of buildings that have demolished.

FIGURE 6  
 SANITARY SEWER SYSTEMS  
 ROHM AND HAAS CHEMICALS LLC  
 MOSS POINT, MS

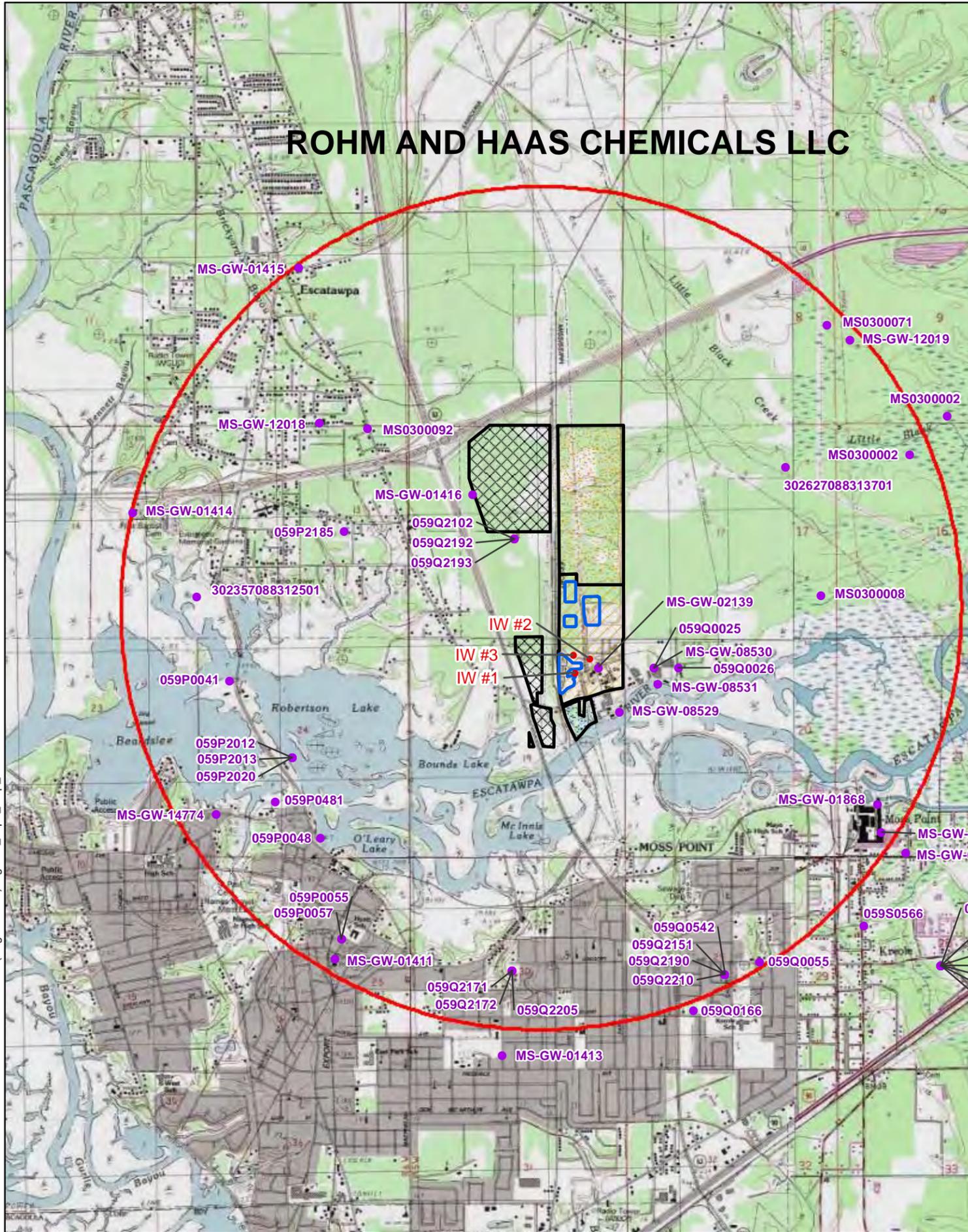
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CREATED: 4/28/05  
 REVISED: 7/19/2016

0' 150' 300'  
 SCALE  
 (IN FEET)

---

**PARSONS**



# ROHM AND HAAS CHEMICALS LLC

Fip Well	Permit Number	Distance and Direction from the Site	Owner Name	Use	Well Depth	Aquifer
059P0041		1.5m,W	HOLTZ SEAFOOD CO.	INDUSTRIAL	206	GRMFU
059P0048		NA	CITY OF MOSS POINT	NOT RENEWED	1100	PCGLL
059P0054	MS-GW-01411	1.5m,SW	MOSS POINT, CITY OF	STANDBY	828	GRMFL
059P0055		NA	CITY OF MOSS POINT	DESTROYED	840	PCGLU
059P0057		NA	CITY OF MOSS POINT	NOT RENEWED	840	PCGLU
059P0226	MS-GW-12018	1.65m,NW	MOSS POINT, CITY OF	STANDBY	345	GRMFL
059P0481		1.5m,W	MAGEHEE, JIM	IRRIGATION	210	NR
059P2012		1.5m,W	MASTER MARINE	COMMERCIAL	120	NR
059P2013		DUP	LARRY GALLOTT	DOMESTIC	520	NR
059P2020		DUP	JAMES FARRAGET	IRRIGATION	74	NR
059P2185		1.2m, NW	MORRIS JAMES	IRRIGATION	75	NR
059Q0015		0.5m, E	THIOKOL CHEMICAL	ABANDONED	250	GRMFU
059Q0018	MS-GW-02139	0.5m, E	MORTON INTERNATIONAL, INC.	INDUSTRIAL	224	GRMFU
059Q0019	MS-GW-08529	0.5m, E	OMEGA PROTEIN, INC.	INDUSTRIAL	950	PCGLU
059Q0025		0.5m, E	SMITH FISHERIES	OBSERVATION	200	GRMFU
059Q0026		0.8m, E	SMITH FISHERIES	INDUSTRIAL	130	GRMFU
059Q0027	MS-GW-08530	DUP	OMEGA PROTEIN, INC.	STANDBY	231	GRMFU
059Q0029	MS-GW-01867	0.7m,E	JACKSON COUNTY PORT AUTHORITY	STANDBY	255	GRMFU
059Q0030	MS-GW-01868	NA	JACKSON COUNTY PORT AUTHORITY	ABANDONED	255	GRMFU
059Q0055		1.5m,SE	JAMES GAUTIER	DOMESTIC	1020	PCGLL
059Q0151	MS-GW-08531	0.5m, E	OMEGA PROTEIN, INC.	STANDBY	232	GRMFU
059Q0158	MS-GW-02138	0.5m, E	MORTON INTERNATIONAL, INC.	ABANDONED	240	GRMF
059Q0159	MS-GW-02140	0.5m, E	MORTON INTERNATIONAL, INC.	ABANDONED	231	GRMFU
059Q0160	MS-GW-02141	0.5m, E	MORTON INTERNATIONAL, INC.	ABANDONED	236	GRMFU
059Q0166		NA	CITY OF MOSS POINT	NOT RENEWED	645	PCGLU
059Q0417	MS-GW-01413	1.8m, S	MOSS POINT, CITY OF	STANDBY	802	GRMFL
059Q0422	MS-GW-01866	1.9m,SE	JACKSON COUNTY PORT AUTHORITY	STANDBY	266	GRMFU
059Q0434	MS-GW-01416	1.1m,N	MOSS POINT, CITY OF	STANDBY	435	GRMFL
059Q0542		1.5m,SE	JOHN HATTON	IRRIGATION	126	NR
059Q2011		2.2m,SE	HENRY PING	DOMESTIC	274	NR
059Q2044		DUP	WILLIE MAPLES	DOMESTIC	247	NR
059Q2046		DUP	L.W. STRINGER	DOMESTIC	242	NR
059Q2053		DUP	FRANCES LARSON	INDUSTRIAL	240	NR
059Q2102		0.8m,N	BANK OF LUCEDALE	COMMERCIAL	200	NR
059Q2126		DUP	MIKE SWITZER	DOMESTIC	270	NR
059Q2151		DUP	JEAN MAHATHAY	DOMESTIC	240	NR
059Q2159		DUP	ROBERT MAGGARD	DOMESTIC	220	NR
059Q2161		DUP	THIOKOL INC.	ABANDONED	222	NR
059Q2171		DUP	KEVIN BEMFIELD	DOMESTIC	100	NR
059Q2172		DUP	MR WILKS	IRRIGATION	100	NR
059Q2190		DUP	FREDRIC SEAB	DOMESTIC	270	NR
059Q2192		DUP	MR HILGER	IRRIGATION	65	NR
059Q2193		DUP	MR SIMMONS	IRRIGATION	100	NR
059Q2205		DUP	EARL JOHNSON	IRRIGATION	85	NR
059Q2210		DUP	M. TANNER	DOMESTIC	130	NR
059Q2239		DUP	WILTON JONES	IRRIGATION	215	NR
059S0566		NA	FINNISH LUTHERAN CHURCH OF KREOLE	DOMESTIC	273	NR
MS0300092		1.22m, NW	PRESLEY'S OUTING	INDUSTRIAL	NR	NR
MS0300008		1.23m, E	CITY OF MOSS POINT	MUNICIPAL	NR	NR
302627088313701		1.28m, ENE	NR	MUNICIPAL	435	GRMF
302357088312501		1.1m, W	NR	INDUSTRIAL	802	PCGL
MS0300002		1.83m, ENE	ESCATAWPA SUBURBAN	MUNICIPAL	NR	GRMF
MS0300071		1.85m, NE	MS POWER CO.	INDUSTRIAL	NR	NR
MS-GW-12019		1.89m, NE	ESCATAWPA SUBURBAN	MUNICIPAL	420	PCGL
MS-GW-14774		1.91m, WSW	CITY OF MOSS POINT	MUNICIPAL	NR	PCGL
MS-GW-01415		2.01m, NNW	CITY OF MOSS POINT	MUNICIPAL	NR	PCGL
MS-GW-01414		2.05m, WNW	CITY OF MOSS POINT	MUNICIPAL	NR	PCGL
MS0300002		2.06m, ENE	ESCATAWPA SUBURBAN	MUNICIPAL	NR	GRMF

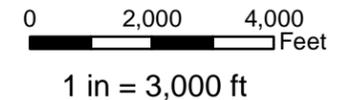
**LEGEND:**

- PLUGGED AND ABANDONED INJECTION WELL
- 2-MILE RADIUS WATER WELL SURVEY - MARCH 2008
- CLOSED HAZARDOUS WASTE LANDFILL
- PROPERTY BOUNDARY
- ▨ SPECIALTY CHEMICALS AREA
- ░ UNDEVELOPED
- ▤ RIVER PARCEL (UNDEVELOPED)
- ▧ NON-CONTIGUOUS TRACTS (UNDEVELOPED)
- 2 MILE RADIUS BUFFER FROM CENTER OF SITE

- NOTES:**
- 1) Well locations are approximate.
  - 2) NR - Not Reported
  - 3) NA - Not applicable due to unidentifiable Lat/Long, the well is no longer in use, the well has been destroyed, or could not be located.

**SOURCES:**

EPA Public Water Systems database;  
 EPA Public Water Systems Violation and Enforcement data; USGS National Water Resource Information Tracking System; Mississippi Water Wells database.



Rohm and Haas Chemicals LLC  
 Moss Point, Mississippi Site

INJECTION AND WITHDRAWAL  
 WELLS WITHIN A 2 MILE  
 RADIUS OF THE SITE

FIGURE 7



# ATTACHMENT C

## POST CLOSURE PLAN AND FINANCIAL REQUIREMENTS

*Post Closure Plan* (Parsons, November 22, 2016)

Moss Point Site Operations Manual:

*Landfill Leachate Management* (Parsons, Rev. 3, August 25, 2016)

*Security Guard Inspection Procedure* (Jacobs, Last Reviewed November 29, 2022)

*Hazardous Waste Contingency Plan for Moss Point* (Jacobs, November 2022)

# **POST CLOSURE PLAN**

Rohm and Haas Chemicals LLC

Moss Point Facility  
5724 Elder Ferry Road  
Moss Point, Mississippi

EPA ID No. MSD 008 186 587

Prepared by  
**PARSONS**  
November 22, 2016

# Post-Closure Plan

## Table of Contents

<b>Section</b>	<b>Page</b>
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1.2 Plan Availability .....	C-2
1.3 Modifications to the Plan .....	C-3
1.4 Certification of Completion of Post-Closure Care.....	C-3
1.5 Post-Closure Cost Estimates .....	C-3
2 Post-Closure Maintenance .....	C-3
3 Groundwater Monitoring .....	C-4
4 Post-Closure Cost Estimates .....	C-5

<b>Tables</b>	<b>Page</b>
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Table 2: Post-Closure Maintenance Schedule .....	C-10
Table 3: Post-Closure Costs .....	C-11

## Attachments

Attachment 1 - Operating Procedures and Sample Inspection Forms

Attachment 2 - Preparedness and Prevention / Contingency Plan

# 1 General Requirements

## 1.1 Applicability

This Post-Closure Plan applies to the Hazardous Waste Landfill, the V-Lagoon and the T-Lagoon which have been closed as landfills. For each unit, post-closure care will involve maintenance of the final cover and groundwater monitoring system and monitoring groundwater quality. During the post-closure period, Rohm and Haas Chemicals LLC (Rohm and Haas) will not disturb the integrity of the final cover or the function of the monitoring system without the approval of the administrative authority.

The post-closure care period will be 30 years, unless it is shortened or lengthened by the administrative authority. The post-closure time period for the Hazardous Waste Landfill, T-Lagoon, and V-Lagoon began in 1999, 1989 and 1986 respectively.

## 1.2 Plan Availability

This plan is available at the Rohm and Haas Facility in Moss Point, Mississippi at the following locations:

Warren Gifford  
5724 Elder Ferry Road  
Moss Point, Mississippi 39563-9752  
228-475-8861

and

Moss Point Regulatory Counsel  
Rohm and Haas Chemicals LLC  
100 Independence Mall West  
Philadelphia, PA 19106-2399  
215-592-6838

and

Rick Wenzel  
Remediation Leader  
The Dow Chemical Company  
550 Independence Parkway S.  
LaPorte, TX 77571  
713-246-0367

Rohm and Haas will retain a copy of this Post-Closure Plan at the Site office located at the former Moss Point Plant until the post-closure care period has expired and certified in accordance with MHWMR 264.118. A copy of this Post-Closure Plan and any revisions will be furnished to the administrative authority upon request. It will also be made available during site inspections on the day of the inspection to representatives of the administrative authority.

### **1.3 Modifications to the Plan**

Rohm and Haas will submit a written request for a modification to amend this Post-Closure Plan at least 60 days prior to proposed changes in facility, design, or operation that will affect post-closure care and/or the implementation of this Plan as specified in MHWMR 264.118(d)(3).

Rohm and Haas will submit a written request for a modification to amend this Post-Closure Plan within 60 days after an unexpected event which will affect post-closure care and/or the implementation of this Plan as specified in MHWMR 264.118(d)(3).

Rohm and Haas will amend this Post-Closure Plan as requested by the administrative authority and in accordance with regulatory procedures established in MHWMR 264.118(d).

### **1.4 Certification of Completion of Post-Closure Care**

As required by 40 CFR 264.120, within 60 days after completion of the established post-closure care period for the unit, Rohm and Haas will submit, by registered mail to the administrative authority, a certification that the post-closure care period for the unit was performed in accordance with this Post-Closure Plan. The certification will be signed by the owner or operator and an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification will be furnished to the Regional Administrator upon request until s/he releases the financial assurance requirements for post-closure care under §264.145(i).

### **1.5 Post-Closure Cost Estimates**

Post-closure cost estimates are provided in Table 3 of this Post-Closure Plan.

## **2 Post-Closure Maintenance**

The final cover for each unit and the groundwater monitoring system will be inspected in accordance with the schedule noted in Table 1 during the post-closure care period for problems, damage, or malfunctions.

The final cover will be inspected for erosion, exposure of the synthetic liner, dead spots in the vegetative cover, settling, and other damage. Problems detected during inspections will be noted in an inspection log and remedied as soon as possible.

Maintenance of the final cover will include soil replacement, reseeding, fertilizing, watering, and mowing as necessary.

The monitoring wells will be inspected for grout settlement and damage, damage to the well casing, damage to the protective casing, integrity of the protective pad and posts, security of the well, and situation of monitoring wells.

Maintenance of the monitoring system will include painting of the protective casing; repairs to the annular seal and pad, and redevelopment of the wells, as necessary.

An inspection schedule is included as Table 1. The inspection schedule includes the corrective actions required for each determination of deterioration indicated during an inspection. Any deterioration of the landfill or lagoon structures deemed to be leading to an imminent hazard to the environment or human health will be remedied on a schedule that will mitigate the hazard. Where a hazard has already occurred, remedial action will be taken immediately.

A maintenance schedule is included as Table 2. The equipment required for preventative maintenance at the site (such as a tractor mower, weed-eater, painting supplies, concrete and grout supplies, etc.) are all available through lease agreements or through subcontractors who may be hired to perform the repairs.

Maintenance and calibration of equipment used for groundwater monitoring is covered in the Groundwater Monitoring Plan.

### **3 Groundwater Monitoring**

Rohm and Haas will utilize the existing groundwater monitoring system for each unit during the post-closure care period.

- T-Lagoon (Alluvial monitoring wells MW-1, MW-4, TAP-3, and TAP-4, and Upper Citronelle monitoring wells MW-20 and MW-70)
- V-Lagoon (Alluvial monitoring wells MW-5, MW-6, MW-7R, MW-8, MW-11, MW-24, MW-26, MW-58, VAP-3 and VAP-4, Upper Citronelle Monitoring wells MW-23, MW-27R, MW-28, MW-29, MW-30, MW-31 and VUCP-1, and Lower Citronelle monitoring well MW-25R)

- Closed Hazardous Landfill (MW-32, MW-33, MW-34, MW-134, MW-135)

The current groundwater monitoring system plans are presented in Appendix E [*Revised Groundwater Monitoring Plan* (Parsons, August 2, 2016) and *Modifications to Groundwater Detection Monitoring Program, Closed Hazardous Waste Landfill*, (GSI, March 2005, Revised January 2006)] of the Post Closure Permit Application. These plans include well locations, well construction details, monitoring parameters, sampling frequency, analytical methods, and sampling procedures.

The newly revised groundwater monitoring plan (*Revised Groundwater Monitoring Plan*, Parsons, August 2, 2016) was recently submitted and approved by the USEPA. It will take the place of the previous groundwater monitoring plan and be implemented accordingly.

Groundwater monitoring activities will continue throughout the post-closure period as specified in the current or subsequently approved revised Ground Water Monitoring Plans

#### **4 Post-Closure Cost Estimates**

Post-closure cost estimates are provided in Table 3.

Post-closure costs consist of the costs to implement post-closure maintenance and monitoring. Post-closure cost estimates are based on hiring a third party to conduct post-closure care activities. Post-closure costs are expressed in current dollar values.

As required by MHWMR 264.144, total post-closure cost estimates have been calculated by multiplying the annual post-closure cost estimate by the number of years remaining in the post-closure period of 30 years or at least 10 years for the permit period where the regulatory time period has expired.

- T-Lagoon - post-closure period has expired
- V-Lagoon- 3 years remaining in the post-closure care period
- Closed Hazardous Waste Landfill - 13 years remaining in the post-closure care period

Post-closure cost estimates will be revised annually in accordance with MHWMR §264.144.

The most recent post-closure care cost estimates will be maintained at Rohm and Haas in Moss Point.

The major post-closure care activities entail:

- Groundwater sampling
- Groundwater analysis;
- Monitor well maintenance; and
- Maintenance of the final cover.

## **TABLES**

**TABLE 1****POST-CLOSURE INSPECTION SCHEDULE**

<b><u>INSPECTION ITEM</u></b>	<b><u>TYPE OF DAMAGE</u></b>	<b><u>*FRE- QUENCY</u></b>	<b><u>CORRECTIVE ACTION</u></b>
<b>FINAL COVER</b>			
Erosion	Note bare spots of exposed dirt or areas of soil erosion	Quarterly and after each heavy rainstorm	Replace soil and plant grass/regrade if necessary to prevent
Liner Exposure	Indicates severe erosion of final cover. Note area exposed and damage, if any, to liner	Quarterly and after each heavy rainstorm	Replace soil and plant grass/regrade if necessary to prevent
Dead Spots	Note areas of no vegetation or dead or dying vegetation. Indicates problem with vegetative cover.	Quarterly and after each heavy rainstorm	Replant vegetative cover/if chronic check for soil vapor or leachate outbreak
Settling	Note depressions or indications of soil movement.	Quarterly and after each heavy rainstorm	Investigate cause, repair or regrade if necessary
Animal Damage	Note animal burrows and insect infestations.	Quarterly and after each heavy rainstorm	Remove animal/insects and repair damage
Obstruction of stormwater drainage ways	Note any accumulation of debris	Quarterly and after each heavy rainstorm	Remove debris
<b>MONITORING SYSTEMS</b>			
Grout Settlement/Damage	Note if annular seal has subsided or cracked.	Annually	Repair/replace wells as needed
Well Casing Damage	Inspect for cracks or broken casing.	Annually	Repair/replace wells as needed
Protective Casing Damage	Determine if needs repainting. Check for rusting. Is it secure, bent, or damaged?	Annually	Repair/replace wells as needed
Protective Pad or Posts	Check for cracking or settlement of pad. Check posts for repainting and damage.	Annually	Repair/replace pads and posts as needed
Security	Check to see if well is locked. Determine if lock is functional.	Annually	Repair/replace locks as needed
Situation of Well	Determine if sediment is accumulating in screened interval.	Every two years	Redevelop wells as needed to keep well screens clear
<b>SITE SAFETY AND SECURITY</b>			
Fencing	Check for integrity of fencing; note any damage	Quarterly	Investigate cause and repair any breaches in fencing

<u>INSPECTION ITEM</u>	<u>TYPE OF DAMAGE</u>	<u>*FRE- QUENCY</u>	<u>CORRECTIVE ACTION</u>
Fire extinguishers	Check pressure gauges	Monthly and after each use	Replace if used or depressurized
Eyewash Station and Decontamination Shower	Check that supplies of eyewash solution are full and that units are functional	Monthly and after each use	Replenish supplies, conduct repairs or replace as necessary
PPE	Check that supplies of disposable PPE are plentiful	Quarterly and after each use	Reorder and restock

**LEACHATE  
COLLECTION SYSTEM**

Leachate collection tank, piping and valves (managed as 90-day storage area)	Check for evidence of leaks	Daily	Immediately discontinue filling or loading operations if active. Notify site manager. Contain leaking liquids and repair or replace tank.
Pump	Check for operability	Prior to each use	If pump is non-functional, use backup pump. Replace or repair primary pump as soon as possible.
Piping and valve systems	Inspect for leaks	Prior to each use and after each freeze	Repair/replace as needed

Note: Any deterioration of the landfill or lagoon structures which are deemed to be leading to an imminent hazard to the environment or human health will be remedied on a schedule that will mitigate the hazard. Where a hazard has already occurred, remedial action will be taken immediately.

\*A heavy rainstorm is defined as 3.5 inches in any 24-hour period.

**TABLE 2**  
**POST-CLOSURE MAINTENANCE SCHEDULE**

<u>Maintenance Item</u>	<u>Frequency</u>
FINAL COVER	
Soil Replacement	As necessary
Reseed	As necessary
Mowing	At least 4 times per year
MONITORING SYSTEM	
Painting Protective Posts and Casing	As necessary
Repairs to Annular Seal and Pad	As necessary
Redevelopment of Wells	As necessary

**TABLE 3  
POST CLOSURE COSTS**

Item	Number	Cost per item	Analysis	Times per year	Total
<b>Monitoring Wells</b>					
T-Lagoon sampling and analysis	6	\$404	\$384	1	\$47,280
V-Lagoon sampling and analysis	18	\$404	\$319	1	\$130,140
Closed Hazardous Waste Landfill sampling and analysis	5	\$404	\$520	2	\$120,120
Inspection - done in conjunction with sampling and ground water level measuring events. Two people one day two times per year - included above					\$0
Annual report preparation and submittal	1	\$47,500		1	\$617,500
Well replacement / Maintenance including painting, locks and casing cover repair	1	\$52,000		0.2	\$135,200
<b>Landfill Leachate Collection System</b>					
Leachate disposal (\$7,000 per truck load and 5 per year)	1	\$7,000		5	\$455,000
Pump and Line Maintenance	1	\$5,000		0.2	\$13,000
Inspections - Conducted by Security costs included below.					
Report generation and submittal included above.					
<b>Landfill / Lagoon Cap Maintenance</b>					
Mowing - Equipment lease and hourly charge for operator	1	\$3,000		4	\$156,000
Erosion / cover repair - soil and seed costs	1	\$5,000		0.25	\$16,250
Inspections - Conducted by O&M Personnel included above.					

**Security and Inspections**

Fence maintenance including signs	1	\$5,000	0.25	\$16,250
Electrical cost - lights and operations	1	\$2,000	12	\$312,000
12-hour security (\$16/hr) - Conduct inspections on off shifts, inspect perimeter fencing, signs and gates, pipelines, landfill, maintain limited access to site.	1	\$70,000	1	\$910,000

**Final report**

Certification		\$15,000	x	\$15,000
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**Sub-Total**

\$2,943,740

10% Contingency

\$294,374

\$3,238,114

# Attachments

**Attachment 1**  
**Operating Procedures and Sample Inspection**  
**Forms**

November 22, 2016

Post Closure Permit Application  
C-14 **Rohm and Haas Chemicals LLC Facility**  
Moss Point, Mississippi

**Attachment 2**  
**Preparedness and Prevention / Contingency Plan**

November 22, 2016

Post Closure Permit Application  
C-15 **Rohm and Haas Chemicals LLC Facility**  
Moss Point, Mississippi



Procedure Name: Landfill Leachate Management

Moss Point Site Operations Manual  
Rohm and Haas Chemicals LLC  
Moss Point, MS

Project Manager: Jack Bunton  
Author: Warren Gifford  
Effective Date: 03/11/14

**Rev 3**

## Document Revision History

Version Number	Date	Description
1	03/11/14	Initial document
Rev 1.1	04/8/14	Modify to include double wall tank inspection requirements.
2	12/17/14	Modify to include daily leachate tank automatic leak detection inspection
3	8/25/16	Clarify containment pad emptying and recording.

## **1.0 Purpose**

- 1.1 This Procedure has been prepared to provide a description of the work processes related to the routine operation of the leachate collection system at the closed hazardous waste landfill at the Rohm and Haas Chemicals, Inc., Moss Point Facility. This document will be updated if conditions change and our approach is revised. All Parsons employees working on the project are responsible for understanding this Procedure and incorporating its provisions in their work efforts.

## **2.0 Process Description**

- 2.1 The process includes all operations and recordkeeping associated with the closed hazardous waste landfill leachate collection system. The system is only operated when pumping leachate from a sump or loading a truck.

## **3.0 Responsibilities**

- 3.1 The Project Manager is responsible to ensure that the systems and procedures are defined.
- 3.2 The On-site Supervisor is responsible for ensuring the procedures described herein are implemented and personnel are trained. On-site supervisor will audit operator to ensure proper compliance with the SOPs and that the work is safely performed.
- 3.3 The Operator is responsible for conducting the leachate measurements, transfers to the storage tank, checking the double walled collection tank secondary containment and coordinates the disposal of leachate within the required time frame.
- 3.4 Site security is responsible to conduct daily rounds and look for visible leaks on the leachate collection pipeline and tank.

## **4.0 Requirements**

- 4.1 Regular inspections of the water level in and condition of each sump and the secondary containment of the leachate collection tank: The inspections will be made weekly. For the leachate collection / detection sumps if the liquid levels remain below the operating level (defined as the inlet pipe elevation) for two months in a row, the frequency of inspection will be reduced to quarterly. If the liquid levels remain below the operating level for two quarters in a row, the frequency will be reduced to semi-annually. If the liquid levels exceed the operating level at the time of any inspection, a weekly inspection frequency will be reinstated. For the leachate tank, the detection system will be inspected for any collection of liquid weekly. The tank also equipped with an automatic leak detection system with green and red indicator lights. A green light indicates no leaks into the secondary containment double wall area and red light indicates a leak and requires that the On-site supervisor be notified immediately to determine. If neither light is illuminated, the On-site supervisor must be notified immediately to have the system checked/repared and returned to good operating condition.
  - 4.1.1 Inspections of the pipeline, equipment, leachate tank double secondary containment automatic for leaks (tank via the automatic leak detector) are

- done on a daily basis by the operator and or the security officer. They will notify the on-site supervisor of any leaks immediately.
- 4.1.2 Annually the tank roof condition will be inspected and the certification checked.
  - 4.1.3 The operator will measure the level of leachate in each sump on a weekly basis (normally Thursday). The values will be recorded on the Daily Operations Log.
  - 4.1.4 The On-site Supervisor will enter the level measurements into the Leachate collection spreadsheet to determine the volume and if there are any reporting requirements. The values will be reported in the weekly report and historical trends are maintained spreadsheets and reported the semi-annual groundwater report.
  - 4.1.5 Storm water will be drained from the tank pad to the storm drainage system after a determination is made that it is not contaminated, if it is determined to be contaminated it will be drained into the leachate system. Drainage will be logged onto the daily operations log.
- 4.2 Pumping of the leachate from any sump with a water level within one foot of the inlet piping to the 90-day on-site storage tank:
- 4.2.1 The Operator will check the volume contained in the 90 day storage tank to see if volume of the sump will fit into the tank. Maximum volume in the tank is 4500 gallons. To ensure that the amount is not exceeded, the pump is interlocked and will not operate if the volume as measured by the electronic level transmitted is exceeded.
  - 4.2.2 To pump the leachate to the 90 day storage tank the operator will make sure all of the valves on the leachate collection header are closed.
  - 4.2.3 Then the valve on the sump to be pumped will be opened.
  - 4.2.4 The pump control switch on the panel located next to sump #6 is turned to the on position.
  - 4.2.5 The sump is pumped until empty (bottom of suction line).
  - 4.2.6 During pumping the operator will monitor the system for leaks and system overflow.
  - 4.2.7 This is repeated for all sumps to be emptied.
  - 4.2.8 After completion of pumping close any valves that are open and turn off the pump.
  - 4.2.9 Make sure all start and ending levels and the volume in the tank are recorded on the daily operations log form.
- 4.3 Within each 90-day period, the 90-day storage tank contents are transferred via tanker truck to a permitted hazardous waste disposal facility following the “Leachate Truck – Manifest” procedure.
- 4.4 Pumping of any sump with a water level elevation within one foot of the inlet pipe elevation (which conservatively represents the base of the landfill) within 48 hours.
- 4.5 Recording of the time, date, and volume pumped from each sump on the daily operation log.
- 4.5.1 Operating data will be recorded on the daily operation log.
  - 4.5.2 The data will be transferred to the Leachate collection spreadsheet.

- 4.6 The recorded leachate volume information will be reviewed on the same schedule as the inspections described in 4.1 above. If the average leachate production from the detection sumps exceeds 45 gallons per day (gpd) for a period of 90 days or more and analysis of detection sumps composite sample is statistically higher than 95% upper control limit compared to previous semi-annual composite samples, the following actions will be taken:
- 4.6.1 Notify MDEQ of the exceedance within 7 days of determination of the exceedance.
  - 4.6.2 Perform a visual inspection of the landfill cover, drainage features, and sumps to identify any changes potentially causing the increase. Determine to the extent practicable the location, size and cause of any leak
  - 4.6.3 Review previous groundwater monitoring data and the most recent statistical evaluation to substantiate the determination that the upper confidence limit has not been exceeded for any parameter. If necessary, implement the resampling strategy described in the Site Groundwater Monitoring Plan.
  - 4.6.4 Prepare a report to be submitted within 14 days of the notification to include the following:
    - 4.6.4.1 Amount of liquids
    - 4.6.4.2 Likely source of liquids
    - 4.6.4.3 Possible location, size, and cause of any leaks
    - 4.6.4.4 Short term actions taken and planned
  - 4.6.5 Assess the source(s) of the liquids, and amounts of liquids by sources(s), the hazard and mobility of the liquids, character of the liquids (via chemical analysis), and the potential for the liquids to escape to and impact the environment. Determine other short or long-term actions to take to stop or mitigate the leaks. Or document why such assessments are not necessary.
  - 4.6.6 Within 90 days, submit an evaluation report to the MDEQ to include the following:
    - 4.6.6.1 Results of any analyses.
    - 4.6.6.2 Results of any actions taken.
    - 4.6.6.3 Ongoing and planned actions and schedule for completion.
    - 4.6.6.4 OR Within 30 days, submit documentation to the MDEQ supporting the determination that further investigation is not required.
- 4.7 Annually, the detection sump criterion (45 gpd) will be reevaluated and a new criterion may be substituted. It is expected that the volume of leachate produced will continue to decrease over time. An adjusted criterion will allow for recognition of a deviation from the normal trend signifying a change in the

leachate production process that should be identified and investigated. Changes in the criterion will be documented in the semi-annual groundwater report.

- 4.8 The leachate volume data and a leachate volume trend analysis section will be included in the groundwater monitoring report submitted semi-annually. The report will include a plot of the total volume of leachate collected from each sump each month and after the data is collected and available, a comparison to data from previous years.
- 4.9 Spare parts and equipment will be procured and replaced/repaired on an as-needed basis.

## 5.0 References

### 5.1 Activity Hazard Analysis for Pumping Leachate

### 5.2 Federal regulations (40 CFR 265.190-197)

### 5.3 §265.195 Inspections.

(a) The owner or operator must inspect, where present, at least once each operating day, data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design. NOTE: Section 265.15(c) requires the owner or operator to remedy any deterioration or malfunction he finds. Section 265.196 requires the owner or operator to notify the Regional Administrator within 24 hours of confirming a release. Also, 40 CFR part 302 may require the owner or operator to notify the National Response Center of a release.

(b) Except as noted under the paragraph (c) of this section, the owner or operator must inspect at least once each operating day:

(1) Overfill/spill control equipment (e.g., waste-feed cutoff systems, bypass systems, and drainage systems) to ensure that it is in good working order;

(2) Above ground portions of the tank system, if any, to detect corrosion or releases of waste; and

(3) The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

(c) Owners or operators of tank systems that either use leak detection equipment to alert facility personnel to leaks, or implement established workplace practices to ensure leaks are promptly identified, must inspect at least weekly those areas described in paragraphs (b)(1) through (3) of this section. Use of the alternate inspection schedule must be documented in the facility's operating record. This documentation must include a description of the established workplace practices at the facility.

Date:  
Recovery Wells:

**Moss Point Daily Operation Log**

Scan to Mobile Server: MP Dailylog Day/Month/Year  
Maintain Paper File on Site

	ARW-1	ARW-2	ARW-3	ARW-4	ARW-5	UCRW-1	UCRW-2	UCRW-3	UCRW-4	UCRW-5	TAR-1	TAR-2	TAR-3	TAR-4
Counter/totalizer														
Line, lock and well condition okay (✓/✗) - comment)														
Operational (✓/✗) - comment)														

	LCRW-1	LCRW-2	LCRW-3	LCRW-4	LCRW-5	LCRW-6	LCRW-7	LCRW-8	LCRW-9	LCRW-10	VUCRW-1	VAR-1	VAR-2	VAR-3
Counter/totalizer														
Flow Rate in GPM computer														
Line/lock and well condition (✓/✗)														
Operational (✓/✗)														

**Comments: (Enter Well ID and indicate maintenance required, or reason for well or line offline:**

Treatment area compressor running (✓/✗)  If N actions taken

Roll off box labeled (✓/✗)

Date on roll off box

**Treatment System:**

Yesterday Discharge gallons  Yest pH  Min  Max

Previous Day Discharge gallons  Prev Day pH

Time	P2/P3 CLR Feed Pump Pressure (PSIG)	Multimedia Filter pressure (PSIG)	Multimedia Filter Differential pressure (PSI)	CLR feed flow rate (GPM)	Totalizer to CLR	Totalizer to city	Flow Rate to City	pH T-676 A/B	pH T-103 A/B	pH Discharge/ Recycle	Lead carbon bed	Weekly / monthly sample taken	Composite Sampler Temp.(C)

Thursday: Weekly flow  Average daily flow  Weekly percent of target  YTD Percent of target  YTD Average daily flow

Preceeding 24 hour pH between 5 and 9.5 (Y or N)

System Leaks Y/N

Polymer pump cleaned on last Monday of each month Date:

Clarifier/Polymer Pump OK/ Polymer Usage OK (Y or N)

OK Win911 Tested (Y or N)

Compliance pH probe Weekly calibration date and form filed

Daily logs reviewed and filed on Fridays

Initials

**System downtime (hrs/cause)/Maintenance required:**

**Leachate system:**

	MH-1 Collection	MH-2 Detection	MH-3 Collection	MH-4 Detection	MH-5 Detection	MH-6 Collection	MH-7 Detection	MH-8 Collection	MH-9 Detection	MH-10 Collection	MH-11 Detection	MH-12 Collection
Start level												
End level												
Pumped gallons:												
Level below inlet Y or N												
Level (Thursdays only):												
Tank volume:												
Fill start date:												
Tank labeled: (Y/N)												
Tank/Roof/Line leaks (Y/N)												
Rainfall total:												
Cap condition:												

Thursday flow total readings	City LS meter	Computer readout	Discharge meter
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**Housekeeping and Safety :**

	If N actions taken	
Safety Showers: Caps on/Accessible/Good condition (Y/N)		
Fire Extinguishers good Condition (Y/N)		
Hoses, fitting, equipment and tools stored (Y/N)		
Signs Okay (Exit, H2S, ETC):(Y/N)		
Site Grounds Housekeeping Rating:		
Office/Switch Gear Room Housekeeping Rating:		
Fence / Gates: Good Contition and Locked (Y/N)		
Perimeter lighting system condition:		
Containers labeled (Y/N)		

**Safety/Housekeeping Checklist**

	Check means good
Drinking water	
Restroom facilities	
PPE available	
Clean work area	
Access/Egress	
Work area lighting	
Tools in good condition	
Permits required	
Training complete	
Equipment stowed after use	

**Daily Site Vehicle, Fork Lift, and Mower Inspection Checklist**

Check means good	G-1	G-2	Mower	Fork Lift	Kubota
Seatbelts, and ROPS					
Tires					
Brakes					
Lights, battery, electronics					
Safety cutoff devices	N/A	N/A			
Mower discharge chute	N/A	N/A		N/A	N/A
Fuel cap, guages and controls					
Winch secured	N/A		N/A	N/A	N/A
Back-up alarm					
hoses, hoist cabling	N/A	N/A	N/A		N/A

**Daily Safety Topics: PPE in good condition** \_\_\_\_\_ **Anticipated Hazards:** \_\_\_\_\_

**Hazard Mitigation Plans:** \_\_\_\_\_

**Planned Daily Activities: (Grass cutting, shipments, subcontractors on-site, etc)** \_\_\_\_\_

**Yesterdays completed items:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Time:** \_\_\_\_\_

Attachment  
Security Guard Inspection Procedure

# Security Guard Inspection Procedure

## Scope

This procedure describes the routine security inspections at the Rohm and Hass Moss Point Site (Site) required to meet the requirements of the Resource Conservation and Recovery Act (RCRA) corrective action inspections and perimeter fence inspections.

The procedure applies to the closed hazardous waste landfill, the closed T-Lagoon, the closed V-Lagoon systems and all other remediation-associated buildings, tanks and pipelines.

## Critical vs Routine

This procedure is to be used by Jacobs and/or security personnel who provide security services at the Site.

Critical       Emergency       Routine       Non-Routine

**Requirement: Carry and complete during training.**

**All procedures for High Risk (Critical) tasks must also:**

- Be formatted to allow sign-off on the steps that are critical/hazardous as they are completed.
- Visual indicators to identify steps/sections that are high consequence to the user must be used.

These steps are made to stand out by using **bold** font or adding 

## Authorized Procedure Users

Jacobs O&M personnel

Trained security personnel

## Hazards and Precautions, including Control Limits

The following table lists job hazards and the precautions that should be taken for safety, environmental, quality, good manufacturing practices, etc. before beginning this procedure. Specific hazards may also be addressed in the procedure steps. For specific chemical hazards and the precautions needed to prevent exposure, refer to the material safety data sheets for the chemicals involved or applicable facility documentation. Include a link if possible.

Hazards	Precaution
General hazards – Head, eye, hand, foot	Hard hat; side shield safety glasses; leather gloves; steel toe leather boots; Cell phones should not be used during this procedure
Chemical exposure with contaminated water in the containment area	Wear chemical protective gloves; steel toe boots
Strains, cuts/abrasions	Wear leather gloves; have good footing; proper body positioning
Slip, trip, fall hazards.	Watch for trip hazards around pad and slippery mud
Biological hazards from biting/stinging insects, poisonous snakes	Look over area carefully; remain aware of surroundings; use insect repellent/spray, as necessary; avoid hazard when possible
Heat or cold stress	Dress appropriately; drink fluids; take breaks (follow heat / cold stress program in the <a href="#">Site's HASP</a> )

## Tools and Equipment

The tools and equipment listed below are needed to do this job.

Tools, Equipment, PPE	Use/Description
Hard hat	Protects the head against falling objects
Steel toe boots	Protects the feet from falling objects and injury if stepping on sharp objects
Side shield safety glasses	Protect the eyes and face from chemical splashes
Insect repellent/wasp spray	Repels insects and mosquitoes
Drinking fluids	Keeps the body hydrated and minimizes the chances of heat stress
Hydrogen sulfide (H <sub>2</sub> S) gas monitor	Needed to monitor for hydrogen around the landfill area
Utility Task Vehicles (UTVs)/Golf cart	Vehicles are used during the inspections to move from one inspection point to another

## Responsibilities

The Rohm and Haas Chemicals LLC Moss Point Site Project Manager is responsible for ensuring that the system and procedures for inspections of the closed landfills and lagoons are defined and the personnel are trained.

The site supervisor is responsible for training Operations and site security personnel, auditing and ensuring that required security inspections of the closed landfills, lagoons and remediation system are completed each day, check and maintain inspection records on site.

Site security and operations personnel, when performing security duties, are responsible to conduct daily inspections and complete the inspection form.

## Training Before You Begin

Designated trainings in the H&S plan must be completed before the task can be performed.

The Jacobs and/or security personnel using this procedure is required to have training on the route and training on what to look out for during the inspections. In addition, the person is required to have training on operating the UTVs used at the Site. The trainings are to be completed annually and documentation maintained in the Site's records building.

I have met the training requirements for this procedure and have reviewed this procedure. I have the skills and knowledge to safely complete all task outlined in this procedure.

This sign-off must be completed BEFORE starting this procedure.

---

Name

---

Job Title

---

Date

## Procedure Requirements

Step	Action (and Hazard/Precaution if applicable)
1	<p>The rounds to inspect the closed hazardous waste landfill, the closed T-Lagoon and the closed V-Lagoon piping systems will be conducted two times daily.</p> <ul style="list-style-type: none"> <li>- Call the Operations person on-call if, for any reason, the officer is unable to conduct the scheduled round</li> </ul> <p><b>Note:</b> <b>For weekend and holidays, inspections are to be conducted four times per day.</b></p>
2	The inspection is to include the condition of the pipe lines, tanks and pump boxes for evidence of leaks. Call the Operations contact if there are any leaks or other abnormalities
3	The results of this inspection will be recorded on the <a href="#">Security Daily Inspection Log</a>
4	The inspections will record the date and time of the inspection, the full name of the inspector and a notation of the observations made
5	The date and nature of any repairs or other remedial actions will be recorded when completed by the Jacobs on site staff
6	The <a href="#">Security Daily Inspection Log forms</a> will be scanned into the server and maintained in the onsite files for at least three years from the date of the inspections before purging

## Inspections Procedures

These steps will be followed in order, unless stated otherwise:

Step	Action (and Hazard/Precaution if applicable)
1	Review the <a href="#">daily security site inspections Activity Hazard Analysis (AHA)</a>
2	<p>Inspect the electric cart for safety brakes and seat belts</p> <ul style="list-style-type: none"> <li>- Follow the AHA for recharging the batteries as required</li> <li>- If the weather or travel routes are impassable use the Kubota XUV to access the routes</li> </ul>
3	<p>Follow the prescribed route while on the inspection rounds, as described in the Inspection Points and Instructions table below</p> <ul style="list-style-type: none"> <li>- Refer to the map if there are any questions and/or ask your supervisor for clarification</li> <li>- <b>The starting point is the marker labelled #1 near the guardhouse</b></li> </ul>
4	Proceed to the marked observation points, and make notation as required on the inspection log form
5	During the rounds, also observe the fencing for signs, posted about every 200 feet
6	<p>Record any abnormal observations in the comment section of the log</p> <p><b>Report any leaks IMMEDIATELY to the on-call operations personnel</b></p>
7	<p>At the end of the inspections:</p> <ul style="list-style-type: none"> <li>- Inspect the charger for the electric cart for defects and report to the on-call operations personnel if faulty</li> </ul>

## Inspection Points and Instructions

**Note: For weekend and holidays, inspections are to be conducted four times per day.**

Inspection Point	Inspection Parameter / Instructions
1	Inspect UCRW-5, the pipe lines visually in both directions for leaks, also the pump at the road crossing
2	Inspect pipe lines for leaks. Turn down to LCRW-6 and look for leaks. Proceed along the pipeline stopping at pumps UCRW-4 and ARW-5. Get out and check for leaks then continue to the rail road tracks then head north. Continue past the electric pole, turn left to #3
3	Stop, turn off the cart and <b>walk</b> to railroad gate and check lock. Visually inspect pipe lines for leaks. Follow the pipe line to T-1 stopping at ARW-4 and ARW-3 and turn north to LCRW-5 stopping at each pump and inspect for leaks
4	Inspect pipe lines visually for leaks; make U-turn and follow map to #5
5	Inspect pipe lines and road crossing, proceed to #6
6	Check lock on gate; <b>walk</b> over to T-1 containment area pumps UCRW-3 and ARW-2, and ARW-1, visually check pipe lines and tank T-1 for leaks or overflows. Also check where pipe line crosses under road. Continue to #7
7	Check lock on gate and pipeline/pumps for leaks stopping at UCRW-2. Continue to #8 at railroad gate
8	Inspect gate, lock, and fence line. Continue forward to pavement. Turn left and then another quick left just past bridge crossing to #9
9	Drive along the pipe line and check lines and pumps UCRW-3 and UCRW-2 for leaks stopping at each pump. Proceed to the back of the treatment unit
10	Check pipe lines and pumps for leaks in the treatment area and VUCR-1
11	Look at tanks for overflows and pipe lines for leaks. Go back to the pavement and turn left over the bridge. Turn left again at intersection. Proceed to #12
12	Check all tanks for overflows; check the air compressor and dryer for proper functioning; check pipelines for leaks; check computer monitor for alerts/alarms; check diesel fuel tank for leaks. Continue by turning left, cross RR tracks, then turn right at first paved road to #13
13	Inspect pipe lines for leaks. Make a U-turn and go back to main road, turning left, then right onto gravel road before RR tracks. Continue to #14
14	Check lines for leaks. Also look over your right shoulder at pipe line coming out of the ground, above the trench wall for leaks. Continue to #15
15	<p>Look down line for leaks and across RR tracks for leaks. Stop at valves and connectors and visually inspect for leaks; check gate and lock. Drive to LCRW-1. Get out and walk to wellhead to check for leaks. Get back on cart, make a U-turn, and go back to pavement, turning left. Take the next left and stop at gate.</p> <ul style="list-style-type: none"> <li>- <b>DO NOT PROCEED WITHOUT CHECKING THE H2S MONITOR!</b></li> <li>- <b>If the H2S monitor's alarm goes off due to high H2S concentration, leave the area immediately and alert the operations personnel</b></li> </ul> <p>Continue to the curve in the road</p>
16	Stop and look to the left at #16, checking for leaks. Continue on pavement to #17
17	<p>Check lock on gate, pipe lines for leaks, and tank top and sides for evidence of staining or leaks.</p> <ul style="list-style-type: none"> <li>- <b>Look for the light on MH-12 electric box. Green is OK.</b></li> <li>- <b>If it is red or off, call the Jacobs employee on duty immediately!</b></li> </ul> <p>Proceed along fence line to #18</p>
18	Check gate lock and fencing. Proceed along fence line to next several markers
19	Check gate, lock and fencing
20	Check gate, lock and fencing
21	Check gate, lock and fencing
22	check gate, lock and fencing

Inspection Point	Inspection Parameter / Instructions
23	Check both gates, locks and fencing. Make a U-turn and bear left to #24
24	<b>Drive up the gravel road stopping at each pump box</b> (TAR-1, TAR-2, TAR-3, TAR-4) and observe pipe lines, pump boxes and road crossing for leaks. Proceed to #25
25	Check pipe lines and road crossing for leaks. Continue straight to intersection and turn left. Turn left at next road and continue to #26. <b>Drive up to LCRW-4</b> and check for leaks at all connectors
26	Check lines both ways and road crossing for leaks. Continue to #27
27	Check lock, gate and fencing. Turn right and proceed to #28
28	Check both gates, locks and fencing; check pipe lines to the right, in front of cement foundation for leaks along the entire length. Check LCRW-7 for leaks. Proceed to #29
29	Check lock and gate at RR crossing. Look to the right and check pipe lines for leaks. Proceed to # 30.
30	Check lock, gate and fencing. Look across roadway at lines for leaks and look at LCRW-9
31	Drive over to LCRW-10, <b>get out of vehicle, walk up to and to the back of LCRW-10 fence</b> , and inspect for operation and leaks
32	Drive to the Omega Shipyard and sign in with Omega Security. Drive to LCRW-9, park approximately 20 feet away from the wellhead and walk up to the wellhead and pipeline, inspection for leaks at every connector. - <b>Notify operations if any leaks are observed</b>
33	Walk up to MW-137 and observe the two valves on the pipeline for leaks. Walk back to cart and return to the guardhouse

## Other Documents Used in Conjunction with this SOP

The following documents are used with this procedure:

- Daily Security Rounds Activity Hazard Analysis (AHA)
- Security Daily inspection Log
- Site Inspection Map
- RCRA Permit (MSP 008186587)

## Consequences of Deviation from this Procedure

Type of Deviation	Consequences	Steps to Prevent or Correct
No / improper PPE	Potential personal injury, including exposure to groundwater contaminated with chemical compounds	Ensure that proper PPEs are used while following this procedure. Inspect PPEs for signs of wear and tear and replace worn PPEs before starting this procedure.
Failure to inspect cart for safety brakes and seat belts	Accident could occur if brakes or seat belts are faulty, and may result in injury to personnel	Inspect the cart for safety brakes and seat belts. Report any issues to operations
Failure to follow prescribed route while on inspection rounds	Potential to miss key details that if not reported, may result in release of contaminated groundwater, damage of equipment, etc	Ensure that the inspection routes are followed as outlined above
Failure to make the rounds twice daily during regular Monday to Friday work week, and four times daily during weekends and holidays	Potential to miss key details that if not reported, may result in release of contaminated groundwater, damage of equipment, etc	Ensure that the inspection routes are followed as outlined above <b>If for any reason the officer cannot complete the rounds, inform the Site's operations personnel</b>

Type of Deviation	Consequences	Steps to Prevent or Correct
Failure to properly document observations	Important observations could be made and not reported to operations	Clearly document observations
Failure to promptly notify site personnel of any leaks observed	Potential release of contaminated groundwater, or malfunction of leachate collection system which may lead to violation of permit requirements	Immediately notify operations of any leaks observed or equipment malfunctions, and properly document observations
Failure to monitor for H <sub>2</sub> S around the landfill area	Potential exposure of personnel to H <sub>2</sub> S, which is hazardous to human health	Ensure that the H <sub>2</sub> S monitor is turned on and working fine before starting the rounds  Make sure that the sample port of the gas monitor is not blocked while making the rounds
Failure to drive/walk up to the specified wells when checking for leaks	Leaks could take longer to be detected, resulting in the release of higher volumes of contaminated groundwater and potential permit/RCRA violation	Be sure to drive/walk up to the recovery wells specified in the Inspection Points and Instructions table above
Failure to inspect electric cart and charger for defects	Electrocution may result from plugging defective electrical parts into electrical outlets	Inspect the unit and charger for defects before plugging it to charge Report any defects to the operations personnel  <b>Do not plug in charges with broken cords!!</b>

## Document and Records Management

The master version of this procedure is in the site electronic document management system and is filed under approved procedures.

A copy of this procedure will be placed in the onsite O&M plan binder in the records building and in the security guard shack.

## Revision History

The following table lists at least the last three changes and/or reviews to this document, with all changes and reviews listed for the last 6 months.

Version Number	Date	Revised By	Description of Changes, Comments
Jacobs-3	9/22/2020	Chisara Anoruo & Warren Gifford	Finalized and posted on SharePoint
Jacobs-3	12/17/21		Annual Review completed; no changes
Jacobs-3	11/29/22		Annual Review completed; no changes

This procedure was validated as the best-known way to do the job by:

*Adam Goodrich*

11/29/22

Adam Goodrich

Jacobs Project Manager

Date

The last revision of this procedure was approved by the following health and safety manager:

*Zeb Anderson*

11/29/22

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**Zeb Anderson**

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**Jacobs Site Health & Safety Manager**

---

**Date**

Check box if required and obtain review signature:

If procedure includes environmental impact or compliance aspects, the last revision of this procedure was approved by the Environmental Manager:

*Branden Watts*

11/29/22

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**Branden Watts**

---

**Jacobs Site E-Compliance Leader**

---

**Date**

# SECURITY DAILY INSPECTION LOG

		Date:								
		Time:								
Areas of Observation	Items to be observed	Observations to make								
H2S gas monitor	Inspect to verify properly working	OK = No safety or operational issues								
Kubota Inspection	Inspect Kubota as per the AHA	OK = No safety or operational issues								
1	Gates; pipeline; UCRW-5	OK = No leaks, locks secure								
2	Pipeline; LCRW-6; UCRW-4; ARW-5	OK = No leaks								
3	Gate; pipeline; ARW-3; ARW-4	OK = No leaks, lock secure								
4	Pipeline	OK = No leaks								
5	LCRW-5 Pipeline & road crossing	OK = No leaks								
6	Gate; pipeline; Tank T-1, UCRW-3; ARW-2; ARW-1	OK = No leaks, lock secure								
7	Gate; pipeline; UCRW-2	OK = No leaks, lock secure								
8	Gate; fence	OK = Lock and fence secure								
9	Pipeline; LCRW-3; LCRW-2	OK = No leaks, fence secure								
10	Pipeline; VUCR-1	OK = No Leaks								
11	Tanks; pipelines	OK = No leaks or overflows								
12	Tanks; diesel; dryer; pipelines; monitor; compressor	OK = No leaks or overflows, comp & dryer running, no alerts on monitor								
13	Pipeline	OK = No leaks								
14	Pipeline; LCRW-1; H2S monitor	OK = No leaks OK = operational, no alarm								
15	Pipeline	OK= No leaks								
16	Pipeline	OK = No leaks								
17A	Leachate area, lights on MH-12	OK = Green- <b>If RED or OFF, call Jacobs contact immediately</b>								
17B	Gate, leachate tank sides & top, piping	OK = No leaks, lock secure								
17C	Signage Present & Legible	OK= Signage is good								
18	Gate; fence	OK = Lock and fence secure								
19	Gate; fence	OK = Lock and fence secure								
20	Gate; fence	OK = Lock and fence secure								
21	Gate; fence	OK = Lock and fence secure								
22	Gate; fence	OK = Lock and fence secure								
23	Gate; fence	OK = Lock and fence secure								
24	Pipeline; TAR-1; TAR-2 ;TAR-3; TAR-4	OK = No leaks								
25	Pipeline; LCRW-4	OK = No leaks								
26	Pipeline	OK = No leaks								
27	Gate; fence	OK = Lock and fence secure								
S28	Gate; pipeline; LCRW-7	OK = No leaks, lock secure								
29	Gate; fence	OK = Lock and fence secure								
30	Gate; pipeline	OK = No leaks, lock secure								
31	LCRW-10; pipelines	OK = No leaks, pump running								
32	LCRW-9; pipelines	OK = No leaks, pump running								
33	MW-137 area	OK = No leaks in pipelines								
	Signs in place	OK = Posted								
	Fencing condition	OK = Secure								
	Lighting	OK = All in-service lights are operating								
	<b>Guard Signature</b>									

If the observation is NOT OK, write in the condition noted, and in the comments section, write who was notified along with the time of the call.

Reviewed and Filed by:	Date:
------------------------	-------

Comments:

Repairs Made:

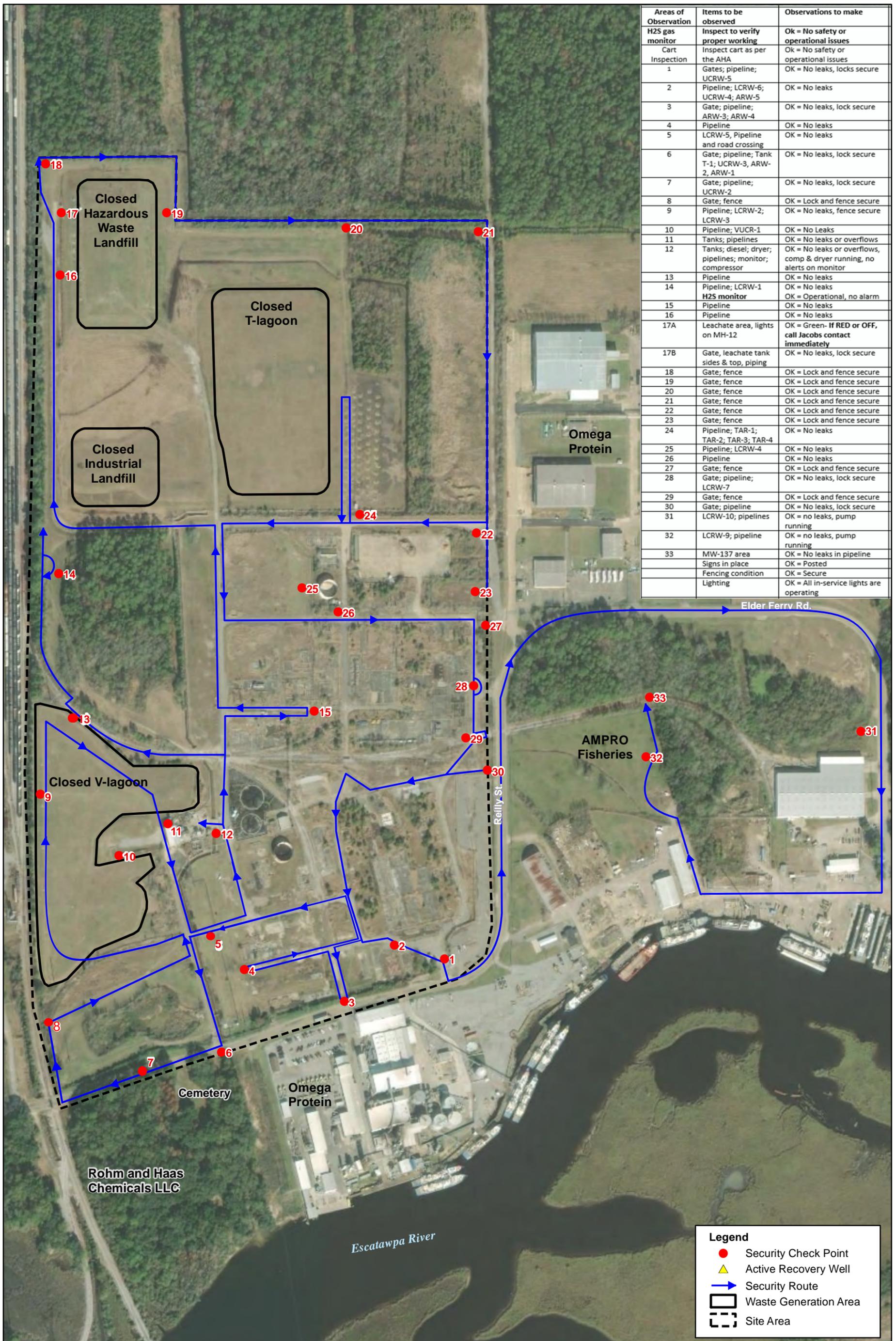


Figure 1. Security Guard Inspection Route  
Rohm and Haas Chemicals, LLC  
Moss Point, Mississippi

Attachment  
Hazardous Waste Contingency Plan

**Contingency Plan Quick Reference Guide  
Moss Point Site  
Rohm and Hass Chemicals LLC  
5724 Elder Ferry Road  
Moss Point, MS 39563**

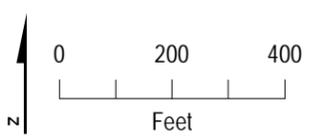
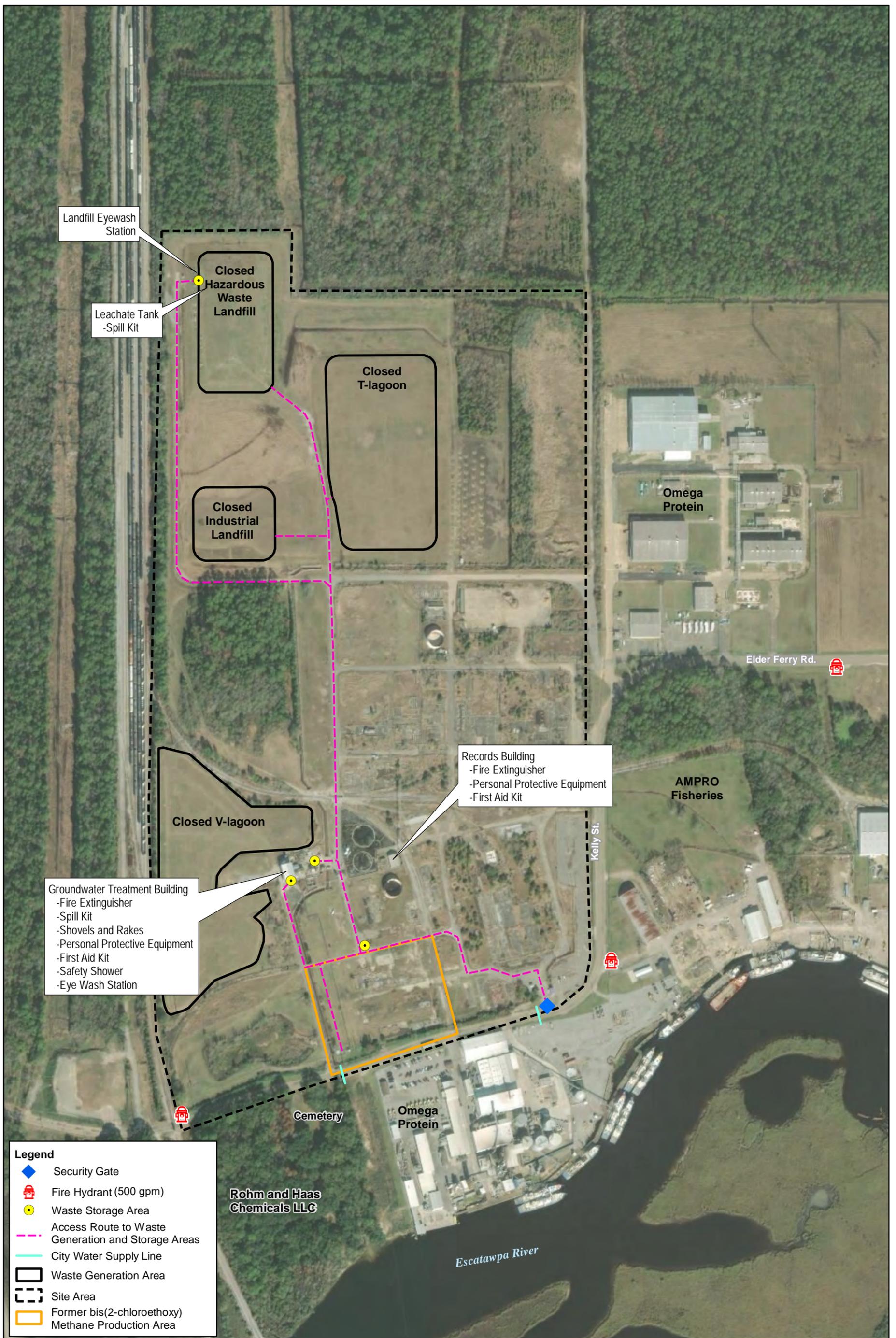
**Facility Contacts:**

Emergency Coordinator:	Jim Hofius	Mobile Number (24/7): (251) 525-7058
Alternate Emergency Coordinator:	Austin Moran	Mobile Number (24/7): (601) 770-2610
Alternate Emergency Coordinator:	Ken Hamilton	Mobile Number (24/7): (228) 224-4745
Alternate Emergency Coordinator:	Mike Jarrell	Mobile Number (24/7): (304) 687-6670
Alternate Emergency Coordinator:	Joe Collins	Mobile Number (24/7): (318) 413-0128
Alternate Emergency Coordinator:	Adam Goodrich	Mobile Number (24/7): (313) 405-4217

**Note:** Remediation and investigation personnel onsite from 0630 to 1530, Monday through Friday. Order of contact during an emergency is listed above. There are no onsite fire or smoke alarms.

**Hazardous Waste Information:**

Waste Stream	Waste Codes/Hazards	Location Accumulated	Maximum Amounts Present	Response Notes	Special Notes to Hospital/Treatment Personnel
Leachate from hazardous waste landfill	F039/Toxicity	Above ground storage tank (AST) located near Closed Hazardous Waste Landfill	5,500 gallons (1 tank)	Prevent contact with skin and eyes. Immediately prevent spills from entering drains and waterways.	If in eyes or on skin, wash eyes or skin for several minutes with water. Remove and dispose of contaminated clothing with disposable personal protective equipment.
Iron sludge	F039/Toxicity	Rolloff located near Groundwater Treatment Building	25 cubic yards (1 rolloff)	Prevent contact with skin and eyes.	If in eyes or on skin, wash eyes or skin for several minutes with water. Remove and dispose of contaminated clothing with disposable personal protective equipment.
Drilling cuttings	F039/Toxicity	55-gallon steel drums in storage area near Groundwater Treatment Building	1,100 gallons (20 drums)	Prevent contact with skin and eyes.	If in eyes or on skin, wash eyes or skin for several minutes. Remove and dispose of contaminated clothing with disposable personal protective equipment.



**Notes:**  
gpm - gallons per minute

Figure 1. Hazardous Waste Areas and Emergency Equipment Locations  
Rohm and Haas Chemicals, LLC  
Moss Point, Mississippi

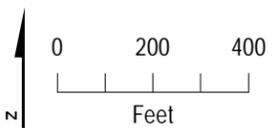
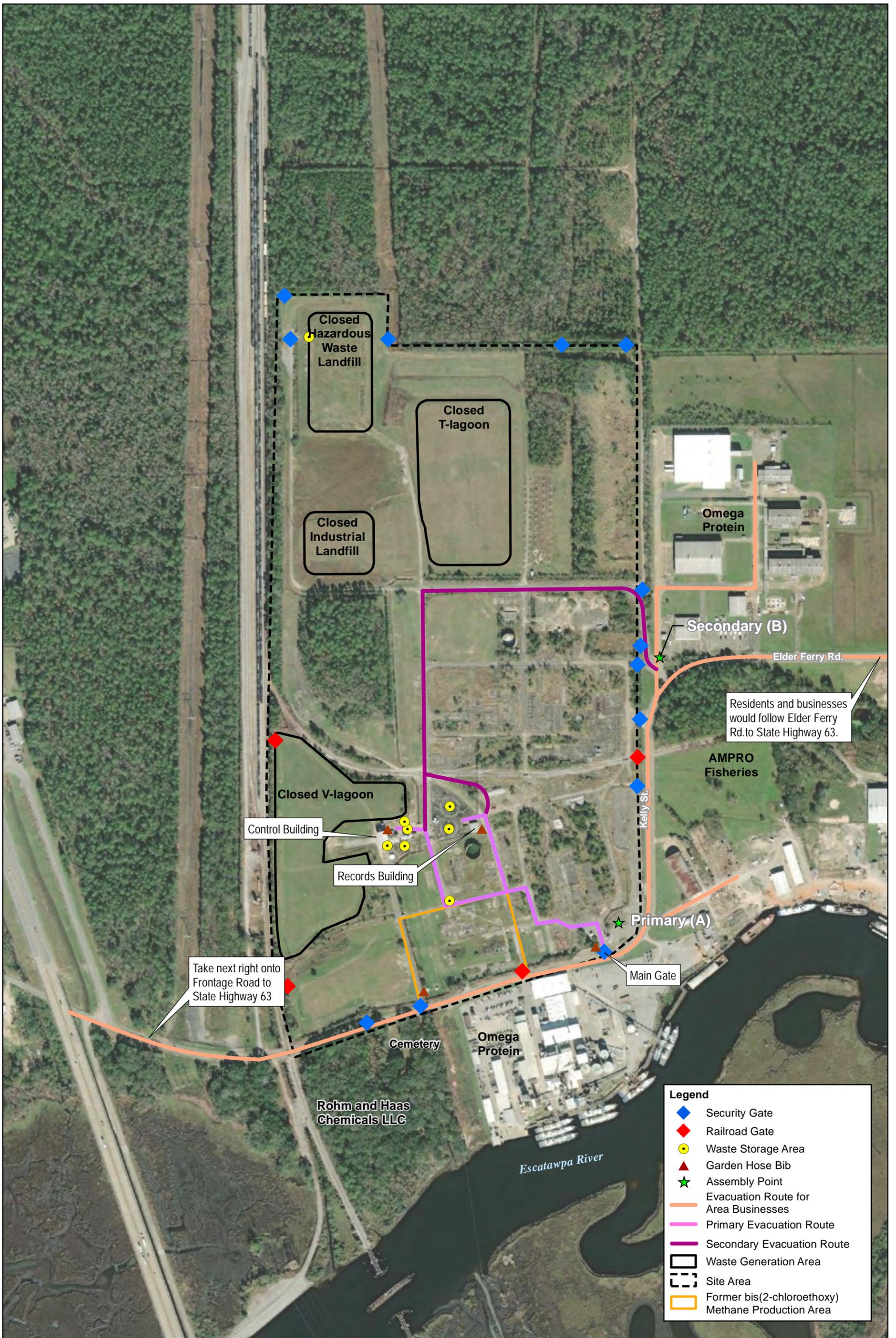


Figure 2. Facility Map  
Rohm and Haas Chemicals, LLC  
Moss Point, Mississippi



## **Rohm and Hass LLC, Moss Point, Mississippi**

### **Hazardous Waste Contingency Plan for Moss Point**

November 2022

Rohm and Haas Chemicals LLC



**Rohm and Haas Chemicals LLC, Moss Point, Mississippi**

Project Number: MSP022DM  
Document Title: Hazardous Waste Contingency Plan for Moss Point  
Document No.: AX1113190956DET  
Date: November 2022  
Client Name: Rohm and Haas Chemicals LLC  
Author: Jacobs Engineering Group Inc.

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## Acronyms and Abbreviations

CFR	<i>Code of Federal Regulations</i>
COC	constituent of concern
Consent Decree	United States of America and the State of Mississippi v. Morton International, Inc., C.A. Number 1: CV501BrB
EC	emergency coordinator
facility	Rohm and Haas facility at 5724 Elder Ferry Road, Moss Point, Mississippi
HASP	health and safety plan
Jacobs	Jacobs Engineering Group Inc.
Morton	Morton International, Inc.
O&M	operations and maintenance
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
Rohm and Haas	Rohm and Haas Chemicals LLC
SSC	site safety coordinator
USEPA	United States Environmental Protection Agency

## 1. Introduction

This contingency plan has been prepared for the Rohm and Haas Chemicals LLC (Rohm and Haas) facility at 5724 Elder Ferry Road, Moss Point, Mississippi (facility). This plan meets the requirements of the Mississippi Hazardous Waste Management Regulations, Rule 1.3, which incorporates the requirements of Title 40 of the *Code of Federal Regulations* (CFR), Part 262 by reference, in its entirety. Therefore, federal regulatory citations are used throughout this document to reference various requirements. The requirements for contingency plans for large quantity generators are defined in 40 CFR 262, Subpart M.

The only ongoing activities at the facility are environmental investigations and remediation being performed pursuant to a consent decree entered on January 11, 2001, between Morton International, Inc. (Morton), the United States of America, and the State of Mississippi captioned "United States of America and the State of Mississippi v. Morton International, Inc., C.A. Number 1: CV501BrB" (Consent Decree).

## 2. Physical Description

**Client Name:** Rohm and Haas Chemicals LLC

**Site Location:** 5724 Elder Ferry Road, Moss Point, Mississippi

**Telephone Number:** 228-475-8861

### 2.1 Facility Description

Rohm and Haas own the property at 5724 Elder Ferry Road, Moss Point, Mississippi (United States Environmental Protection Agency [USEPA] Identification and Resource Conservation and Recovery Act [RCRA] Permit Number MSD008186587). The facility, a former Morton chemical specialty and adhesives plant, closed in December 2001, and the manufacturing buildings have been demolished. The only ongoing activities at the facility are environmental investigations and remediation being performed pursuant to the Consent Decree.

The Consent Decree integrated existing permit requirements pertaining to groundwater monitoring, including those specified in a Mississippi Hazardous Waste Management Permit for Post-Closure Care (RCRA Permit MSD008186587). Additionally, the Consent Decree incorporated by reference an Administrative Order issued by USEPA on April 9, 1999, pursuant to Section 3013 of RCRA, 42 United States Code § 6934.

The Section 3013 RCRA Order required Morton to conduct a comprehensive site evaluation. The site evaluation program is being implemented at the facility together with operation of interim remedial measures and the sitewide groundwater monitoring program. Interim measures consist of a groundwater recovery system and groundwater treatment system. The sitewide groundwater monitoring program is specified in the approved *Revised Groundwater Monitoring Plan* (Parsons 2016).

The RCRA groundwater monitoring program is focused around three solid waste management units (T-Lagoon, V-Lagoon, and Hazardous Waste Landfill) and the former bis(2-chloroethoxy)methane production area (Formal Area). The T-Lagoon and V-Lagoon are former wastewater retention ponds that were closed in accordance with RCRA provisions in 1986 and 1989, respectively. The Hazardous Waste Landfill, which received solid waste produced at the facility, was closed in 1999 in accordance with the RCRA Permit. The former Formal Area, which housed the main storage and production structures, is in the southern portion of the property.

To contain and remove constituents of concern (COCs) from the subsurface, a groundwater recovery and treatment system was installed as an interim remediation measure. The recovery and treatment systems are operating at the site with recovery wells in each of the three uppermost water-bearing zones.

### 2.2 Directions to the Facility

The facility is in an industrial area in Jackson County off U.S. Highway 63 South, approximately 4 miles west of Moss Point, Mississippi in southeastern Mississippi. All persons entering the facility must sign in and out at the guard shed located on the property. All persons entering the facility for the first time must meet with Jacobs onsite operations staff to attend the Health and Safety Orientation. The guard shed is staffed 12 hours a day, 7 days a week unless the guards are completing their rounds; however, it is expected that emergency responders would cut the fence locks if they need to enter the site when the guard shed is not occupied.

### 2.3 Hazardous Waste Generated and Locations

The hazardous waste streams generated at the site consist of contaminated groundwater, soil, iron sludge, and debris that are contaminated with toxicity code F039 (Leachate – liquids that have percolated

through land disposed wastes). Groundwater is typically managed onsite within tank T-693 (leachate tank) and tank T-676 (groundwater recovery tank for the T-Lagoon and V-Lagoon recovery well system) in accordance with Mississippi State Code § 77, National Pollutant Discharge Elimination System Permit MSP092041 and RCRA Permit MSD008186587. The iron sludge and contaminated debris are managed in a rolloff container in accordance with Mississippi State Code § 77.

Generated purge water is transported to the onsite treatment area in 5-gallon buckets with secured lids. The contents are emptied into one of the onsite sumps, and the containers are triple rinsed, with the rinse water also poured into the sump.

## **2.4 Anticipated Emergencies**

Potentially hazardous waste releases and other emergencies that could occur include, but are not necessarily limited to:

- Spill from a damaged hazardous waste tank, potential volume of 5,500 gallons
- Spill from a damaged hazardous waste rolloff, potential volume 25 cubic yards
- Release during groundwater sampling, potential volume of 5 gallons
- Fire within or near the onsite area

Actions that would be taken in any of these circumstances are listed in Section 3.

### 3. Emergency Action

The following subsections provide procedures and emergency contact information associated with emergency preparedness and response. Each field effort conducted by Jacobs Engineering Group Inc. (Jacobs<sup>1</sup>) will have a designated site safety coordinator (SSC) and emergency coordinator (EC). In some cases, the SSC and EC will be the same person. While the EC is the primary person responsible for directing emergency response actions to be taken by Jacobs personnel and subcontractors, the SSC has key responsibilities related to initial response and communications during field activities. The SSC will contact the EC in the case of an emergency, as soon as it is safe to do so, and will follow the instructions of the EC from that point forward.

Jacobs personnel are not trained as first responders and will only respond when it is safe to do so and to the extent of their training. Additional information is provided in Section 3.1.3.

#### 3.1 Pre-Emergency Planning

##### 3.1.1 Emergency Coordinators

ECs at the facility are responsible for coordinating all emergency response measures and implementing the necessary emergency procedures. The ECs are familiar with all aspects of this contingency plan, operations and activities at the facility, the location and characteristics of hazardous waste handled, the location of records within the facility, and the facility's layout.

ECs have the authority to commit the resources needed to carry out the contingency plan. The ECs designated at the facility are listed in Table 1. The primary EC is listed first, followed by the alternate ECs in the order in which they will assume responsibility.

**Table 1. Emergency Contact Numbers**

Emergency Contact Numbers	
<b>Medical/Fire/Spill Police Emergency - 911</b>	
Local Ambulance #:	911
Local Fire Dept. #:	911 or 228-475-8848
Local Police #:	911 or 228-475-1711
<b>EMERGENCY COORDINATOR</b>	
Name:	Jim Hofius
Phone:	251-525-7058 (mobile)
<b>ALTERNATE EMERGENCY COORDINATOR</b>	
Name:	Austin Moran
Phone:	601-770-2610 (mobile)
<b>ALTERNATE EMERGENCY COORDINATOR</b>	
Name:	Kenneth Hamilton
Phone:	228-224-4745 (mobile)
<b>ALTERNATE EMERGENCY COORDINATOR</b>	
Name:	Mike Jarrell
Phone:	304-687-6670 (mobile)

<sup>1</sup> On December 15, 2017, CH2M HILL Companies Ltd. and its subsidiaries including CH2M HILL Engineers, Inc. became part of Jacobs Engineering Group Inc.

**Table 1. Emergency Contact Numbers**

Emergency Contact Numbers	
<b>ALTERNATE EMERGENCY COORDINATOR</b>	
Name:	Joe Collins
Phone:	318-413-0128 (mobile)
<b>ALTERNATE EMERGENCY COORDINATOR</b>	
Name:	Adam Goodrich
Phone:	313-405-4127 (mobile)
<b>DOW REMEDIATION LEADER</b>	
Name:	Brad Wilkinson
Phone:	979-238-2516
<b>DOW WASTE COORDINATOR</b>	
Name:	Prentice Wilson
Phone:	281-228-8917
<b>JACOBS DOW PROGRAM DIRECTOR OF HEALTH AND SAFETY</b>	
Name:	Jeanne Burgess
Phone:	508-208-3653
<b>JACOBS MOSS POINT ENVIRONMENTAL COMPLIANCE MANAGER</b>	
Name:	Branden Watts
Phone:	304-561-4583
<b>JACOBS MOSS POINT HEALTH AND SAFETY MANAGER</b>	
Name:	Zeb Anderson
Phone:	985-705-4257
<b>JACOBS MOSS POINT PROJECT MANAGER</b>	
Name:	Adam Goodrich
Phone:	313-405-4127
<b>NATIONAL RESPONSE CENTER (NRC)</b>	
Phone:	800-424-8802
<b>JACKSON COUNTY EMERGENCY OPERATIONS CENTER</b>	
Name:	Earl Etheridge (Director)
Phone:	228-769-3111
Phone:	228-769-3063 (Emergency)
<b>MISSISSIPPI EMERGENCY MANAGEMENT AGENCY (MEMA)</b>	
Name:	Jana Henderson
Phone:	601-933-6636
Phone:	800-222-6362 (24-hour Emergency Line)
<b>FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) REGION IV – OFFSITE IMPACT ONLY</b>	
Phone:	770-220-5200

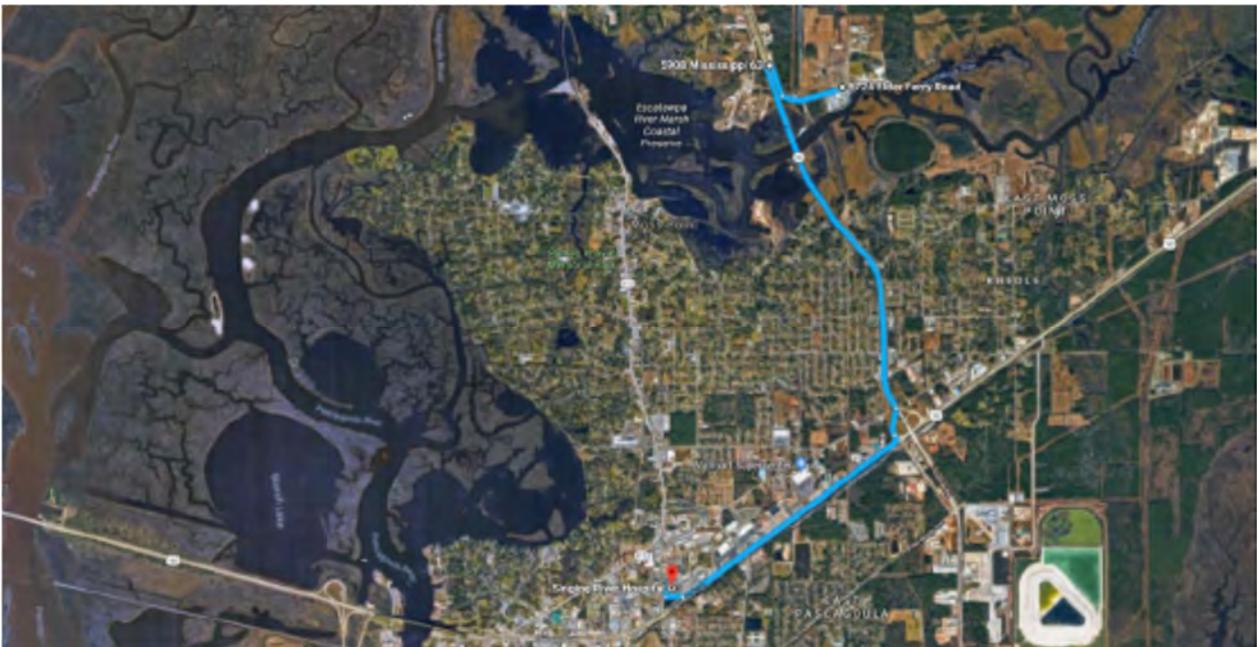
## Directions to Hospital

### Local Hospital:

Singing River Hospital  
2809 Denny Avenue  
Pascagoula, Mississippi  
225-938-5000

- |  |           |
|--|-----------|
| 1. Head East                                   | 364 feet  |
| 2. Turn Right toward Elder Ferry Road          | 0.3 mile  |
| 3. Turn Right onto Elder Ferry Road            | 0.4 mile  |
| 4. Turn Right toward MS-63 S                   | 0.3 mile  |
| 5. Turn Left onto MS-63 S                      | 0.3 mile  |
| 6. Slight Right onto the ramp to US-90         | 0.2 mile  |
| 7. Keep Right at the fork and merge onto US-90 | 1.8 miles |
| 8. Hospital is on Right                        |           |

Estimated time 12 minutes Total Distance 5.8 miles



### 3.1.2 Arrangements with Emergency Response Agencies

40 CFR 262.256 requires that large quantity generators attempt to make arrangements with emergency responders and response contractors taking into account the types and quantities of hazardous wastes handled at the facility. Based on the nature of the waste generated and the work performed at the site, the facility relies on local emergency response services (911) and defers to their emergency management and response procedures. The emergency response equipment available from the City of Moss Point is sufficient in both number and kind to respond to the anticipated emergencies above; therefore, no additional arrangements are required. The facility has verified that local police, fire, and ambulance services will respond to calls for assistance to 911.

As required by 40 CFR 262.256(b), the Moss Point Police and Fire departments have been provided with a quick response guide as well as copies of this contingency plan. These include information on the facility, the properties of waste handled and associated hazards, and possible injuries or illnesses that could result from fires, explosions, or releases at the facility. Appendix A contains the delivery records.

This facility is not seeking a waiver as described in 40 CFR 262.256(c).

**3.1.3 Pre-Emergency Planning Tasks**

At least monthly inspections of emergency response equipment are performed as part of ongoing operations and maintenance (O&M) to verify it is in good working order. For non-O&M work, the SSC will inspect or reinspect the equipment needed for their work before beginning non-O&M work. The Jacobs SSC performs the applicable pre-emergency planning tasks before starting field activities and will work at the direction of the EC to coordinate emergency response with Jacobs, onsite parties, the facility, and local emergency service providers as appropriate. The following additional tasks will be performed monthly for O&M and before conducting fieldwork for non-O&M work.

- Review the facility emergency and contingency plans where applicable.
- Verify that communication equipment (e.g., phones, cell phones) is available and working.
- Confirm that emergency telephone numbers, evacuation routes, assembly areas, and route to hospital are posted and communicate the information to staff.
- Rehearse the emergency response plan before non-O&M activities begin.
- Verify that “Exit” signs are posted above exit doors and “Fire Extinguisher” signs are posted above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Verify that site emergency equipment including, but not limited to, fire extinguishers, first aid kits, eye washes, spill kits, personal protective equipment (PPE) are accessible and in good condition.
- Where appropriate, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- The EC will evaluate emergency response actions and initiate appropriate follow-up actions.

Documentation of these tasks are captured in the project files.

**3.2 Emergency Equipment and Supplies**

A map is posted onsite with the locations of emergency equipment. The SSC for any fieldwork will ensure each field team has a copy of this map with them when performing offsite work. Emergency equipment, supplies, and their location are listed in Table 2.

**Table 2. Emergency Equipment and Supply Locations**

Emergency Equipment and Supplies	Location	Capabilities
Fire extinguisher (A/B/C classes)	Operations and maintenance vehicles, groundwater treatment building, and records building	Extinguishes incipient stage fires.
First aid kit/bloodborne-pathogen kit	O&M vehicles, groundwater treatment building, and records building	Contains equipment to treat minor injuries that do not require care beyond first aid.
Eye wash	Groundwater treatment building and leachate tank unloading area	Removes or dilutes contaminants from the eyes. May be used as first aid or during pre-emergency response care.
Potable water	Groundwater treatment building	Decontaminates people and equipment. Can also be used as part of first-aid care.
Safety shower	Groundwater treatment building	Removes or dilutes contaminants from the personnel and clothing. May be used as first aid or during pre-emergency response care.

**Table 2. Emergency Equipment and Supply Locations**

Emergency Equipment and Supplies	Location	Capabilities
Spill kits (55-gallons)	Groundwater treatment building and leachate tank unloading area	Absorbs spills and prevents their spread. Spill kits are appropriately sized according to hazards present in the immediate area.
Personal protective equipment including gloves and safety glasses	Groundwater treatment building and records building	Protects first responders against hazards from spilled material.
Cell phone	With each employee	Calls for assistance from any location onsite.
Office phone	Groundwater treatment building and records building	Calls for assistance from the office.
Shovels and rakes	Groundwater treatment building	Construction of earth diversion berms or other structures.

### 3.3 Incident Assessment

Whenever there is an incident, the EC will assess the situation to determine the direct and indirect possible hazards to human health and/or the environment that may result from the incident. This assessment will be based on the character, exact source, amount, and areal extent of any released materials. The EC may do this using observation, witness accounts, review of records, and/or chemical analysis. Should the EC determine that an incident is a threat to human health or the environment outside the facility, the appropriate government authorities will be notified to assist in response and/or evacuation efforts.

### 3.4 Incident Response

In the event of fires, explosions, or releases of hazardous waste, the EC will assess the situation and the EC, or their designee will take the following actions, *if it is safe to do so*:

- Shut down affected Jacobs operations
- Evacuate the immediate work area
- Stop and/or contain the release (e.g., by placing absorbents, draining tanks below the level of the leak, or constructing a berm)
- Protect drains, environmental receptors, and similar from the release
- Extinguish an incipient stage fire (e.g., contained to a small trash can or similar)

If it is *not* safe to take action to mitigate the emergency, the EC will:

- Evacuate all personnel, if needed
- Call 911 to request assistance (see Section 4)
- If evacuated, account for all personnel at the designated muster point or points
- If evacuated, the EC will meet the emergency responders at the designated muster point

So long as it is safe to do so, the EC must not leave the site (or muster point if evacuated) until emergency responders have taken control of the site. The EC will remain onsite or leave based on the direction of the emergency responders. If allowed to remain, the EC should stay onsite until reports have been properly made and Jacobs and/or Rohm and Haas management have provided instruction to leave. Other Jacobs personnel should stay on the scene or leave, as directed by the EC.

### 3.5 Emergency Medical Treatment

Injuries and illnesses (including overexposure to contaminants) must be reported as required in the project health and safety plan (HASP).

- In the event of major medical emergencies, including but not limited to the following, immediately call 911:
  - Severe bleeding
  - Loss of consciousness
  - Chest pain
  - Broken bones
- Notify appropriate emergency response authorities listed in Section 4.
- The SSC or EC will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room by:
  - Preventing further injury
  - Initiating first aid and CPR where feasible
  - Getting medical attention immediately
  - Performing decontamination where feasible; lifesaving and first aid or medical treatment takes priority
  - Ensuring the injured person is accompanied to the emergency room
- All other injuries or illnesses (even those that are minor and may only require first aid) which occur at work, while on business travel, or commute must be reported immediately as directed in the HASP

### 3.6 Evacuation Procedure

If an evacuation is needed, verbal communication or cellular phone contact with onsite personnel will be initiated by the EC.

In the event of an emergency requiring evacuation of the facility, employees will exit the closest exterior door in the building not obstructed by the cause of the evacuation. Upon exiting the building, employees should walk to the main security gate (primary assembly area). If the path is obstructed or employees are directed by the EC or their designee to proceed to the secondary assembly area, the employees should walk to the back gate across from the leachate tank (northwestern section of the facility). Personnel should await further instruction from the EC (or SSC if the EC is not present) and should consult Appendix B.

Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map attached to this plan. If any changes to these evacuation route(s) and assembly area(s) are deemed necessary for a particular field event, these changes will be designated by the EC before work begins. Personnel will assemble at the assembly area(s) upon receiving instruction to evacuate.

The EC (or designee if the EC is not present) will account for all personnel in the onsite assembly area. A designated person will account for personnel at alternate assembly area(s). Personnel that are working in offsite areas will muster at an offsite location designated before beginning work.

After everyone is accounted for and the EC or their designee has told the employees to do so, they may leave the site by taking a right onto Kelly Street and take the next right onto the Frontage Road to State Highway 63. If the EC or their designee gives the all clear signal, then employees may return to their work location before the evacuation was called.

### 3.7 Evacuation Signals

Table 3 lists evacuation signals.

**Table 3. Evacuation Signals**

Signal	Meaning
Grasping throat with hand	Emergency—help me
Thumbs up	OK; understood
Grasping buddy's wrist	Leave area now
Direct verbal or cellular phone contact.	Emergency; leave site now

### 3.8 Post Emergency Actions

The EC will coordinate post-emergency actions, such as waste management, in accordance with existing site plans. If emergency response equipment is used, it will be decontaminated and ready to return to service before resuming normal operations. Disposable emergency response equipment will be replaced before resuming normal operations.

The time, date, and details of any incident that requires implementing the contingency plan will be noted in the facility operating record. Within 15 days after the incident, a written report on the incident will be submitted to the Mississippi Department of Environment Quality that includes the information listed in 40 CFR 262.265(i).

## 4. Emergency Contacts

After taking any safe initial action to mitigate the emergency (Section 3.3), the EC or their designee will make any additional contacts required. Emergency contacts are listed in Table 1.

## **5. Reference**

Parsons. 2016. *Revised Groundwater Monitoring Plan, Rohm and Haas Moss Point Facility.*

**Appendix A**  
**Emergency Response Agency**  
**Acknowledgment**

Rohm and Haas Chemicals LLC

5724 Elder Ferry Road

Moss Point, MS 39563

Hazardous Waste Contingency, Preparedness, and Prevention Plan

I acknowledge the receipt of a copy of the Rohm and Haas Chemicals LLC Hazardous Waste Contingency, Preparedness, and Prevention Plan. In addition, the staff from the City of Moss Point Fire Department listed below acknowledge that they visited the Rohm and Haas Chemicals LLC Moss Point facility on the indicated date and were shown the locations of hazardous waste storage and spill response materials.

Date: 09/27/21

Name: Roland Mims Representative of Moss Point Fire Department

Signature:  Representative of Moss Point Fire Department

Name: Elliott Jenne Representative of Moss Point Fire Department

Signature:  Representative of Moss Point Fire Department

Name: \_\_\_\_\_ Representative of Moss Point Fire Department

Signature: \_\_\_\_\_ Representative of Moss Point Fire Department



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		<b>Weight:</b>	2.0 LB/0.91 KG
<b>Recipient:</b>		<b>Shipper:</b>	
MOSS POINT, MS, US,		ATLANTA, GA, US,	

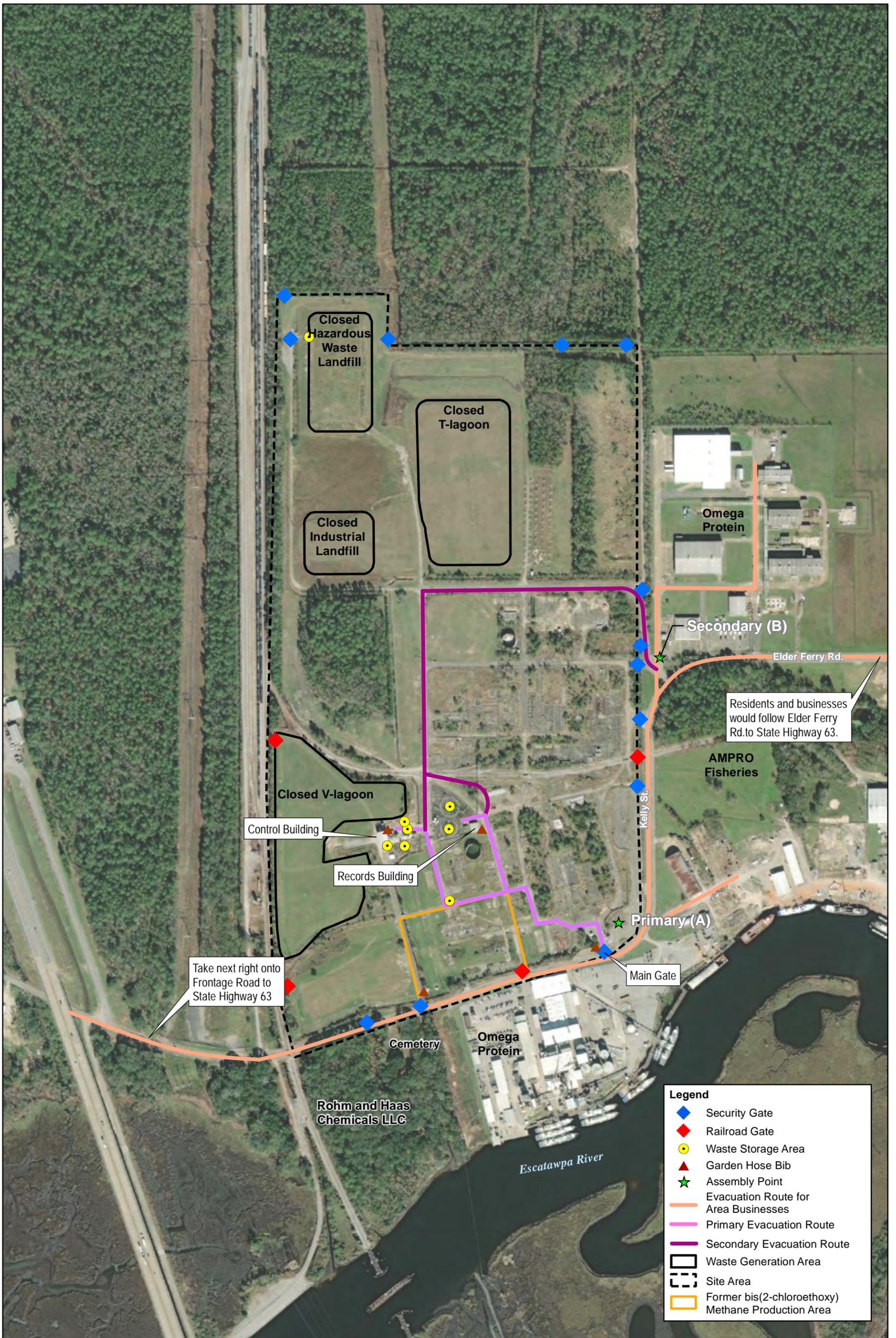
<b>Reference</b>	MSP022DM.A.P7.EV.01.AS
<b>Purchase Order</b>	NEVA CARTER

Signature image is available. In order to view image and detailed information, the shipper or payor account number of the shipment must be provided.

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## **Appendix B**

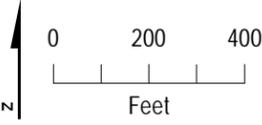
### **Facility Map**



Take next right onto Frontage Road to State Highway 63

Residents and businesses would follow Elder Ferry Rd. to State Highway 63.

- Legend**
- ◆ Security Gate
  - ◆ Railroad Gate
  - Waste Storage Area
  - ▲ Garden Hose Bib
  - ★ Assembly Point
  - Evacuation Route for Area Businesses
  - Primary Evacuation Route
  - Secondary Evacuation Route
  - ▭ Waste Generation Area
  - ▭ Site Area
  - ▭ Former bis(2-chloroethoxy) Methane Production Area



Appendix B. Facility Map  
Rohm and Haas Chemicals, LLC  
Moss Point, Mississippi





# **ATTACHMENT D**

## **GROUNDWATER SAMPLING AND ANALYSIS PLAN**

*Modifications to Groundwater Detection Monitoring Program, Closed Hazardous Waste Landfill (Groundwater Services, Inc., Rev. January 13, 2006)*



GROUNDWATER  
SERVICES, INC.

## **MODIFICATIONS TO GROUNDWATER DETECTION MONITORING PROGRAM**

### **Closed Hazardous Waste Landfill**

Morton International, Inc., Moss Point Facility  
Moss Point, Mississippi

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GSI Job No. G-2845  
Issued: March 29, 2005  
Revised: June 26, 2006

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## MODIFICATIONS TO GROUNDWATER DETECTION MONITORING PROGRAM

### Closed Hazardous Waste Landfill

Morton International, Inc., Moss Point Facility  
Moss Point, Mississippi

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## MODIFICATIONS TO GROUNDWATER DETECTION MONITORING PROGRAM

### Closed Hazardous Waste Landfill

Morton International Inc., Moss Point Facility  
Moss Point, Mississippi

#### 1.0 INTRODUCTION

Morton International, Inc. ("Morton") (the "Moss Point Facility" or "Facility"; EPA ID No. MSD 008 186 587), located at 5724 Elder Ferry Road, Moss Point, Jackson County, Mississippi, is conducting an environmental investigation of its 431-acre property pursuant to a Consent Decree captioned *United States of America and the State of Mississippi v. Morton International, Inc.*, C.A. No. 1:CV501BrB ("Consent Decree"), entered Jan. 11, 2001, which incorporates the provisions of a RCRA Section 3013 Administrative Order ("3013 Order") issued by U.S. EPA Region 4 on April 9, 1999.

Pursuant to the Consent Decree, which incorporates the RCRA 3013 Order, Morton is conducting an overall site evaluation program including characterization of the environmental setting of the Facility, identification and definition of past and present source(s) of hazardous wastes and hazardous waste constituents, and identification of potential or actual on-site and off-site environmental receptors. Ultimately, the results of the site evaluation program will be utilized to identify needed corrective action for the Facility and to support the development of such needed corrective measures.

On December 21, 1999, a meeting took place between representatives of the EPA and Morton, during which EPA requested that Morton consider development and implementation of a *Groundwater Monitoring Plan* (GMP) for the Facility. As identified at this meeting, the general goals of the GMP would be the collection of groundwater data to facilitate evaluation of constituent concentration trends, seasonal variation, and the effectiveness of natural attenuation processes in controlling plume migration beneath the Facility.

As a result of this meeting, Morton developed a GMP to address these general groundwater goals. The GMP was submitted by Morton to EPA on February 4, 2000. A revised GMP was submitted on August 30, 2000, in response to comments made by EPA. Subsequent modifications and revisions related to drilling and monitoring well installation practices were proposed in separate letters submitted to EPA on January 23, 2001, and February 9, 2001. EPA approved the modified GMP in a letter dated April 9, 2001.

Under the provisions of its hazardous waste permit (RCRA Permit, No. 88-587-01), Morton has historically conducted a Groundwater Detection Monitoring Program (GWDMP) at the Closed Hazardous Waste Landfill, located at the Facility. Under the provisions of the Consent Decree, as discussed in Section 1.3 of the approved *Phase I*

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*Investigation Report/Phase II Workplan* (July 11, 2003) the GWDMP has continued in a modified form as part of the GMP. For the Closed Hazardous Waste Landfill, the GMP semi-annual report addresses whether a statistically-significant indication of a release is indicated from the Closed Hazardous Waste Landfill.

In a submittal dated January 11, 2005 (*Modifications to Groundwater Monitoring Plan*), Morton presented a number of proposed modifications to the GMP. This document is currently under review by EPA. As stated on page 9 of *Modifications to Groundwater Monitoring Plan*, "Morton is continuing to evaluate the ongoing program for detection of potential releases from the Closed Hazardous Waste Landfill, and intends to submit proposed modifications to the ongoing program under separate cover." This document (i.e., *Modifications to Groundwater Detection Monitoring Program*) represents the proposed modifications referenced in the *Modifications to Groundwater Monitoring Plan* document.

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## 2.0 CURRENT SAMPLING PROGRAM

### 2.1 Description of Current Sampling Program

The Closed Hazardous Waste Landfill is located on the western portion of the Facility, north of former Facility process areas (see Figure D.1). The landfill was constructed in 1986 and was closed pursuant to an approved closure plan in 1999. During its active life, the landfill received solid and hazardous wastes generated at the Facility.

The Alluvial Aquifer comprises the uppermost water-bearing unit beneath the Closed Hazardous Waste Landfill (see Figures D.2 and D.3). The Alluvial Aquifer is unconfined and generally includes surface soils from the ground surface to a depth of approximately 30 feet below ground surface. Surface soils typically consist of silty clay with ferric iron stains and concretions. Water-bearing portions of the Alluvial Aquifer consist of fine to medium-grained sand with some silt and generally discontinuous, interbedded clay layers and seams with thickness up to five feet. The upper portion of the Alluvial Aquifer is described as finer-grained and less permeable than the lower portion. Based on rising-head slug tests conducted as part of the Phase II investigation performed pursuant to the Consent Decree (see Section 4.5 of *Interim Site Evaluation Report*, June 2, 2004), the mean hydraulic conductivity of the Alluvial Aquifer is approximately 0.0004 cm/sec.

Under the provisions of its hazardous waste permit (RCRA Permit, No. 88-587-01), Morton has historically conducted a Groundwater Detection Monitoring Program (GWDMP) at the Closed Hazardous Waste Landfill. Under the provisions of the Consent Decree, these activities have continued in a modified form as part of the GMP. For the Hazardous Waste Landfill, the GMP semi-annual report addresses whether a statistically-significant indication of a release is indicated from the Closed Hazardous Waste Landfill, based on groundwater sampling results from monitoring wells screened within the Alluvial Aquifer and located adjacent to the landfill.

Parts VI.E.6 through VI.E.8 of the permit address detection monitoring at the Closed Hazardous Waste Landfill. Monitoring wells designated as downgradient wells in the permit are MW-32, MW-33, MW-34, LAP-3, and LAP-4. Monitoring well LAP-2 is designated as the background (i.e., upgradient) well. The specified monitoring procedures in the permit include: 1) an initial year of quarterly sampling; 2) calculation of a background mean value for Short List Constituents of Concern (COCs); and 3) evaluation of subsequent sampling results to determine whether there has been a statistically significant increase for any Short List COC over its background value. Short List COCs are identified as the following six constituents: carbon disulfide, 1,1-dichloroethane, 1,2-DCA (1,2-dichloroethane), 1,1,1-trichloroethane, BCEE [bis(2-chloroethyl)ether], and BCEM [bis(2-chloroethoxy)methane].

## 2.2 Evaluation of Current Sampling Program

### 2.2.1 Groundwater Flow Pattern

As part of the GMP, water level elevation measurements in all Facility monitoring wells are measured on a quarterly basis, and potentiometric surface maps reflecting the quarterly measurements are included in semi-annual monitoring reports. To assess shallow groundwater flow patterns in the vicinity of the Closed Hazardous Waste Landfill, Alluvial Aquifer potentiometric surface contour maps from the RCRA Semiannual Groundwater Monitoring Reports for the ten most recent documented measurement episodes were reviewed. A potentiometric surface contour map reflecting results from the June 2004 event is shown on Figure D.1. A summary of flow information from the ten measurement events is provided on the following table.

Date of Measurement Event	Primary Alluvial Aquifer Groundwater Flow Direction in Vicinity of Closed Hazardous Waste Landfill
June 4, 2004	Southeast
February 19, 2004	Inward, from north and south
November 7, 2003	Northwest
August 25, 2003	Inward, from north and south
May 19, 2003	South-southeast
February 25, 2003	Inward from north and southeast
November 5, 2002	Inward from north and south, westerly flow component to LAP-2
August 27, 2002	Inward from north and south, southeasterly flow component
May 10, 2002	Northeast, mound at MW-16 and MW-32
February 21, 2002	Inward from north and south, easterly flow component

**Note:** Primarily flow direction is noted. Variation in flow direction in the Alluvial Aquifer is present across site.

As shown on the table, the flow direction within the Alluvial Aquifer in the vicinity of the Closed Hazardous Waste Landfill does not exhibit a consistent flow direction, but rather, is extremely variable from quarter to quarter.

### 2.2.2 Monitoring Well Network

The monitoring well network specified in the permit consists of six monitoring wells (downgradient wells MW-32, MW-33, MW-34, LAP-3, and LAP-4 and background well LAP-2). In addition to these six Alluvial Aquifer wells, the following Alluvial Aquifer monitoring wells are also present in the vicinity (i.e., within 200 feet) of the Closed Hazardous Waste Landfill: MW-16, MW-47, and MW-48 (see Figure D.1). Well specifications for each of the nine wells are provided below; additional information regarding the wells is provided on Table D.1 (Monitoring Well Specifications, Alluvial Aquifer Wells, Vicinity of Closed Hazardous Waste Landfill).



Monitoring Well ID	Installation Date	Total Depth (ft., BGS)	Screen Interval		Primary Alluvial Lithology
			Top (ft., MSL)	Bottom (ft., MSL)	
LAP-2	Apr-86	15.0	-4.06	-9.06	Silt
LAP-3	Apr-86	33.0	-14.69	-24.69	Silty Sand
LAP-4	Apr-86	35.5	-11.16	-26.16	Silty Sand
MW-32	Apr-88	40.0	-19.56	-28.56	Silty Sand/Sand
MW-33	Apr-88	37.0	-16.88	-25.88	Silty Sand/Sand
MW-34	Apr-88	40.0	-14.77	-28.77	Silty Sand/Sand
MW-16	Jan-85	41.5	-25.50	-36.00	Clayey Sand
MW-47	Jun-93	30.0	-3.96	-23.36	NA
MW-48	Jun-93	34.9	1.35	-28.03	NA

**Notes:**

NA = Data not available; monitoring well log not available.  
 MSL = Mean Sea Level. BGS = below ground surface.

As shown, with the exception of LAP-2 (designated as the background well in the permit), the wells are screened with generally comparable horizon within the Alluvial Aquifer (see Figures D.2 and D.3). Monitoring well LAP-2, with a depth of 15 feet, is shallower than the other monitoring wells and screens a shallow silt horizon rather than the sand horizon screened by the other wells in the network for which information is available.

The monitoring well network specified in the permit was based on an idealized west-to-east groundwater flow direction, with LAP-2 (located west of the Closed Hazardous Waste Landfill) designated as the upgradient well, and LAP-3, LAP-4, MW-32, MW-33, and MW-34 designated as downgradient wells. As previously discussed, flow direction within the Alluvial Aquifer in the vicinity of the Closed Hazardous Waste Landfill does not exhibit a consistent flow direction, but rather, is extremely variable from quarter to quarter. Under such a variable flow regime, a conventional approach to monitoring well designation (i.e., permanent designation of wells as upgradient or downgradient) does not appear to be appropriate.

**2.2.3 Release Detection**

As discussed in Section 5.1.4 of the *RCRA Semi-Annual Groundwater Monitoring Report (May 2004)*, the current groundwater monitoring data set does not allow determination of whether a statistically significant indication of a release from the Closed Hazardous Waste Landfill has occurred. Previous operations at the landfill appear not to have completed the initial year of quarterly sampling referenced in the permit, and as a result, calculation of a background mean value for Short List Constituents of Concern (COCs), which serves as the basis for identifying whether a statistically significant indication of a release, could not be performed. This section evaluates whether or not available data indicates that an indication of a release from the Closed Hazardous Waste Landfill has

occurred, and also evaluates the suitability of the current monitoring well network for identifying potential future releases.

The six monitoring wells included in the current GWDMP (MW-32, MW-33, MW-34, LAP-3, LAP-4, and LAP-2) have been sampled in conjunction with the GMP groundwater monitoring program on a semi-annual basis since 1991. Prior to that time, the wells were sampled on a semi-annual basis as part of the permit-specified detection monitoring program. For the May 2001 through May 2004 period, as stated in the *RCRA Semi-Annual Groundwater Monitoring Report (May 2004)*, "Only carbon disulfide and 1,2-DCA have been detected in one downgradient well. For the May 2001 event, carbon disulfide was detected in LAP-2 (1.8 µg/L) and LAP-4 (2.3 µg/L). 1,2-DCA has been detected in LAP-4 in all events from 2001 to November 2003 at concentrations ranging from 1.5 to 2.2 µg/L. For the current event (May 2004), there were no detections of any COCs for these wells. Values for all of these previous sampling events are below the Drinking Water Maximum Contaminant Limit values."

For the time period from May 2001 through May 2004, the following table presents a record of COC detections for the six wells included in the current GWDMP (MW-32, MW-33, MW-34, LAP-3, LAP-4, and LAP-2) and the three additional Alluvial Aquifer monitoring wells located in the vicinity of the Closed Hazardous Waste Landfill (MW-16, MW-47, and MW-48).

Monitoring Well	Approximate Distance from Unit, Direction	Original Designation in Permit	COC Detections Under GMP (since May 2001)
LAP-2	60 ft., west	Background (Upgradient)	<b>May 2001:</b> 1.8 µg/L carbon disulfide
LAP-3	200 ft., south-southwest	Downgradient	None
LAP-4	300 ft., south	Downgradient	<b>May 2001:</b> 1.7 µg/L 1,2-DCA, 2.3 µg/L carbon disulfide <b>Nov 2001:</b> 2.2 µg/L 1,2-DCA <b>May 2002:</b> 1.5 µg/L 1,2-DCA <b>Nov 2002:</b> 2.2 µg/L 1,2-DCA <b>May 2003:</b> 1.8 µg/L 1,2-DCA <b>Nov 2003:</b> 2.0 µg/L 1,2-DCA
MW-32	50 ft., east	Downgradient	None
MW-33	50 ft., east	Downgradient	None
MW-34	50 ft., south	Downgradient	None
MW-16	150 ft., east	Not Designated	<b>May 2001:</b> 2.7 µg/L 1,2-DCA <b>Nov 2001:</b> 3.0 µg/L 1,2-DCA <b>May 2002:</b> 3.9 µg/L 1,2-DCA, 14 µg/L BCEM <b>Nov 2002:</b> 4.0 µg/L 1,2-DCA <b>May 2003:</b> 3.0 µg/L 1,2-DCA <b>Nov 2003:</b> 2.7 µg/L 1,2-DCA <b>May 2004:</b> 3.8 µg/L 1,2-DCA



Monitoring Well	Approximate Distance from Unit, Direction	Original Designation in Permit	COC Detections Under GMP (since May 2001)
MW-47	100 ft., northeast	Not Designated	<b>May 2001:</b> 4.7 µg/L 1,2-DCA, 1.2 µg/L carbon disulfide <b>Nov 2001:</b> 6.8 µg/L 1,2-DCA <b>May 2002:</b> 5.8 µg/L 1,2-DCA <b>Nov 2002:</b> 7.1 µg/L 1,2-DCA <b>May 2003:</b> 4.2 µg/L 1,2-DCA <b>Nov 2003:</b> 2.3 µg/L 1,2-DCA <b>May 2004:</b> 5.6 µg/L 1,2-DCA
MW-48	100 ft., northwest	Not Designated	None

**Notes:**

1. Not Designated = well was not designated in the permit as part of the Groundwater Detection Monitoring system.
2. COC Detections Under GMP = detections of "Short List" Constituents from GMP sampling events from May 2001 through May 2004. A PQL (Practical Quantitation Limit) of 1.0 µg/L applied to the volatile organic constituents (carbon disulfide, 1,1-dichloroethane, 1,2-DCA, and 1,1,1-trichloroethane. For the semivolatile constituents (BCEE and BCEM), a PQL of 5 µg/L was achieved.

COC concentrations reported over the May 2001 - May 2004 time period do not suggest that a release from the Closed Hazardous Waste Landfill has occurred. Over the May 2001-May 2004 time period, monitoring well LAP-2 recorded a single detection of carbon disulfide at a concentration of 1.8 µg/L (The proposed action level for carbon disulfide is 1 mg/L or 1000 µg/L; see Table 3.1 of the *Interim Site Evaluation Report*). Carbon disulfide is a known laboratory contaminant, and the reported carbon disulfide result was not corroborated by previous or subsequent analytical results. Similarly, the single carbon disulfide concentration reported from LAP-4 was not corroborated by previous or subsequent analytical results.

Reported concentrations of 1,2-DCA are restricted to monitoring wells LAP-4, MW-16, and MW-47. LAP-4 is located approximately 300 feet south of the Closed Hazardous Waste Landfill and is immediately adjacent to the Closed Industrial Landfill. Monitoring well MW-34, located much closer to the Closed Hazardous Waste Landfill in a similar southerly orientation from the landfill, has recorded no concentrations of 1,2-DCA. All reported concentrations of 1,2-DCA at LAP-4 are below the MCL of 5 µg/L.

Monitoring wells MW-16 and MW-47 are not part of the detection monitoring well network specified in the permit, but are located in moderate proximity to the Closed Hazardous Waste Landfill (i.e., approximately 150 feet east and 100 feet northeast, respectively). Over the May 2001 - May 2004 time period, both wells have consistently reported concentrations of 1,2-DCA. At MW-16, 1,2-DCA concentrations have ranged from 2.7 to 4.0 µg/L, below the MCL of 5 µg/L. At MW-47, concentrations of 1,2-DCA

have ranged from 2.3 to 7.1 µg/L. A third well, MW-76, located approximately 200 feet north of MW-47, has also reported concentrations of 1,2-DCA comparable to those reported in MW-16 and MW-47 (e.g., 4.5 µg/L in May 2004). Monitoring well MW-76 is screened at a shallower Alluvial Aquifer horizon (-6.23 to -15.83 ft MSL) compared to MW-16 and MW-47, and the deeper Alluvial Aquifer horizon screened by monitoring wells MW-16 and MW-47 is not present north of the Closed Hazardous Waste Landfill (e.g., at MW-76, MW-87, and MW-88). The shallow dilute 1,2-DCA plume defined by MW-16, MW-47, and MW-76 is bounded by Alluvial Aquifer monitoring wells MW-32, MW-48, MW-17, MW-2, MW-87, and MW-88, where no 1,2-DCA was measured in May 2004, at a PQL of 1.0 µg/L (see Figure 14 of the *RCRA Semi-Annual Groundwater Monitoring Report (May 2004)*). MW-16 also reported a 14 µg/L concentration of BCEM for the May 2002 sampling event; however, this measurement was not corroborated by previous or subsequent analytical results.

Based on the orientation and location of the shallow dilute 1,2-DCA plume relative to the Closed Hazardous Waste Landfill, the landfill does not appear to be the source of the 1,2-DCA measured in MW-16, MW-47, and MW-76. No 1,2-DCA has been measured at monitoring well MW-32, located adjacent to the landfill approximately 100 feet west-southwest of MW-16. Based on cumulative measured potentiometric surface measurements, a flow gradient capable of transporting a potential release northeasterly from the Closed Hazardous Waste Landfill (as would be required to approximate the observed 1,2-DCA distribution) does not appear to be present. In addition, other potential sources may exist (e.g., historic waste management practices east or north of the current landfill location) to account for the observed distribution. Finally, as discussed in the following section, 1,2-DCA was not detected in a sample of landfill leachate collected on November 29, 2004. This shallow plume will be addressed in the overall site evaluation and corrective action program being performed pursuant to the Consent Decree and 3013 Order.

Based on the preceding information provided regarding well depth, well location, flow direction, and distribution of COCs, the potential suitability for each of the nine wells for use in detection monitoring at the Closed Hazardous Waste Landfill is evaluated below:

Monitoring Well	Approximate Distance from Unit, Direction	Suitable for Detection Monitoring?	Comments
LAP-2	60 ft., west	no	Screened in a shallower horizon than other network monitoring wells.
LAP-3	200 ft., south-southwest	no	Too far from unit.
LAP-4	300 ft., south	no	Too far from unit; MW-34 is closer along equivalent orientation.
MW-32	50 ft., east	yes	
MW-33	50 ft., east	yes	
MW-34	50 ft., south	yes	



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Monitoring Well	Approximate Distance from Unit, Direction	Suitable for Detection Monitoring?	Comments
MW-16	150 ft., east	no	Too far from unit. MW-32 is closer along comparable orientation. Exhibits 1,2-DCA concentrations from apparent historic non-landfill source.
MW-47	100 ft., northeast	no	Not optimally located adjacent to unit. Exhibits 1,2-DCA concentrations from apparent historic non-landfill source.
MW-48	100 ft., northwest	no	Not optimally located adjacent to unit.

### 2.2.4 Monitoring Constituents

As previously discussed, the analytes used for detection monitoring at the Closed Hazardous Waste Landfill are carbon disulfide, 1,1-dichloroethane, 1,2-DCA, 1,1,1-trichloroethane, BCEE, and BCEM. 1,2-DCA, BCEE, and BCEM represent principal groundwater constituents that have been detected in other areas of the Facility. Carbon disulfide is not an appropriate constituent for a detection monitoring program, as it is a known laboratory contaminant, and can occur naturally.

In order to facilitate selection of appropriate groundwater monitoring parameters most representative of landfill contents, leachate samples were collected from leachate collection sumps for analysis on November 15 and December 1, 2005. The samples were analyzed at STL Laboratory, Mobile, Alabama, for volatile organic compounds (EPA Method 8260B), semivolatile organic compounds (EPA Method 8270C), Appendix IX metals (EPA Method 6010B and mercury by 7470A), 2-chloroethanol (EPA Method 8015B), triethylamine (EPA Method 8015), and sulfide (Method 376.2). Copies of the laboratory reports are included in Attachment A.

A record of the organic constituents detected in the leachate samples is provided on the following table, which presents a preliminary screening of suitability as a detection monitoring parameter based on prevalence and concentration.

Constituent	No. Detects/No. Samples	Average Conc., mg/L	Prevalent?	High Concentration?	Potential Parameter?
Acetone	8/10	4.0	yes	yes	yes
Benzene	1/10	0.00011	no	no	no
2-Butanone (MEK)	8/10	3.6	yes	yes	yes
Carbon disulfide	10/10	0.44	yes	no	no
1,1-Dichloroethane	6/10	0.016	yes	no	no
1,2-Dichloroethane	1/10	0.00073	no	no	no
cis-1,2-Dichloroethene	1/10	0.00081	no	no	no
Ethylbenzene	5/10	0.009	yes	no	no
2-Hexanone	1/10	0.004	no	no	no
Styrene	2/10	0.0017	no	no	no
Toluene	10/10	0.6146	yes	yes	yes
1,2,3-	1/10	0.00085	no	no	no



Constituent	No. Detects/No. Samples	Average Conc., mg/L	Prevalent?	High Concentration?	Potential Parameter?
Trichloropropane					
Xylenes, Total	5/10	0.058	yes	no	no
Acetophenone	2/10	0.06	no	no	no
Aniline	9/10	4.7	yes	yes	yes
Benzoic Acid	9/10	26	yes	yes	yes
1,4-Dioxane	10/10	0.22	yes	no	no
Phenol	8/10	1.2	yes	yes	yes

**Notes:**

1. Averages are rounded to two significant digits. Non-detect results were entered as zeroes for averaging purposes.
2. "Prevalent" defined as detected in at least 50 percent of samples analyzed (at least 5/10).
3. "High Concentration" defined as an average concentration equal to or greater than 0.5 mg/L, allowing for detection in groundwater samples at a detection limit of 0.005 mg/L assuming an attenuation factor of 100 between leachate and groundwater.
4. For purposes of initial screening, those constituents that are both prevalent and high-concentration were retained for additional evaluation.

As shown on the preceding table, six constituents (acetone, 2-butanone, toluene, aniline, benzoic acid, and phenol) were retained in the initial screening process. Acetone and 2-butanone are recognized as common laboratory contaminants (*Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services*, Revision 2.1, July 1999, U.S. EPA Region 4), with a significant chance of false positive results if used as detection monitoring parameters. On this basis, acetone and 2-butanone are eliminated from consideration as monitoring parameters.

Benzoic acid occurs naturally in soil and some plants, is a common food preservative, and is also a degradation product of toluene and xylenes (Public Health Assessment, Waste Inc. Landfill, Michigan City, La Porte County, Indiana, [http://www.atsdr.cdc.gov/HAC/PHA/waste/wil\\_p2.html](http://www.atsdr.cdc.gov/HAC/PHA/waste/wil_p2.html)). In comparison to other potential parameters, it has an elevated detection limit in groundwater (approximately 0.050 mg/L, see Method 8270C, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrophotometry, <http://www.epa.gov/epaoswer/hazwaste/test/pdfs/8270c.pdf>). In addition, benzoic acid is reported in the referenced EPA description of Method 8270C as being potentially subject to erratic chromatographic behavior. The Region 9 PRG for benzoic acid in tap water is 150 mg/L, above the highest concentration observed in the landfill leachate. Based on the combination of these factors, benzoic acid is not a suitable parameter for inclusion in the groundwater detection monitoring program at the Closed Hazardous Waste Landfill.

The remaining constituents (toluene, aniline, and phenol) are prevalent, present in leachate in high concentrations, and can be reliably quantified in groundwater samples. On the basis of the leachate sampling results, toluene (EPA 8260B), aniline (EPA 8270C), and phenol (EPA 8270C) have been identified as the most appropriate constituents for ongoing groundwater detection monitoring at the Closed Hazardous Waste Landfill.

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For existing wells to be proposed for inclusion in the modified GWDMP (MW-32, MW-33, and MW-34), the current GMP data set (May 2001 through November 2004) for toluene, aniline, and phenol consists of the following:

- toluene: 8 events, not detected, detection limit of 1 ug/L
- aniline: 1 event, not detected, detection limit of 5 ug/L
- phenol: 1 event, not detected, detection limit of 10 ug/L

Based on these data, 1) no evidence of a release from the Closed Hazardous Waste Landfill is indicated; and 2) background concentrations of these constituents in monitoring wells adjacent to the landfill appear to be below quantitation limits, consistent with use of the constituents as monitoring parameters for release detection.

### 3.0 PROPOSED DETECTION MONITORING SPECIFICATIONS

Based on information provided in Section 2 of this document, and in consideration of the framework provided by the Consent Decree, proposed specifications for continued groundwater detection monitoring at the Closed Hazardous Waste Landfill are provided in this section.

#### 3.1 Proposed Monitoring Well Network

The proposed modified monitoring well network includes the following existing and new monitoring wells (see Figure D.1). The modified network includes at least one well alongside each of the four sides of the Closed Hazardous Waste Landfill. The proposed Point of Compliance (POC) for the Closed Hazardous Waste Landfill has been modified to be consistent with the proposed monitoring well network and variable Alluvial Aquifer groundwater flow direction. The modified POC is shown on Figure D.1.

Monitoring Well ID	Appx. Distance from Unit, Direction	Installation Date	Total Depth (ft., BGS)	Screen Interval		Primary Alluvial Lithology
				Top (ft., MSL)	Bottom (ft., MSL)	
MW-32	50 ft., east	Apr-88	40.0	-19.56	-28.56	Silty Sand/Sand
MW-33	50 ft., east	Apr-88	37.0	-16.88	-25.88	Silty Sand/Sand
MW-34	50 ft., south	Apr-88	40.0	-14.77	-28.77	Silty Sand/Sand
MW-134	50 ft. north	May-05	42.0	-26.83	-36.83	Silty Sand/Sand
MW-135	50 ft. west	May-05	16.0	-0.18	-10.18	Silty, Clayey Sand

**Notes:** MSL = Mean Sea Level. BGS = below ground surface.

Existing wells utilized in the detection monitoring program are, MW-32, MW-33, and MW-34. A new detection monitoring well (MW-135) was installed approximately 200 ft south of LAP-2 along the west side of the landfill. A boring advanced adjacent to LAP-2 (where LAP-2-R was previously proposed) did not encounter the Alluvial Aquifer sand horizon equivalent to that screened by the other detection monitoring wells; therefore proposed monitoring well LAP-2-R was not installed and LAP-2 was not removed. Another new detection monitoring well (MW-134) was installed on the north side of the landfill. Due to the variable flow direction exhibited in the vicinity of the Closed Hazardous Waste Landfill, wells will not be designated as upgradient/background or downgradient. As discussed further in Section 3.3.3, the proposed statistical procedure for the detection monitoring program does not require background or downgradient well designation.

The new monitoring wells were installed in accordance with the well installation procedures specified in the approved *Groundwater Monitoring Plan* (submitted August 30, 2000; approved by EPA on April 9, 2001). Monitoring well installation procedures were documented in a report titled *Supplemental Monitoring Well Installation Field Program, Groundwater Monitoring Plan*, submitted July 29, 2005.



In addition, at the request of MDEQ, for a period of one year beginning in May 2006, LAP-3, MW-47, and MW-48 will be sampled on a semi-annual basis (i.e., will be sampled in May and November 2006). Sampling results obtained from LAP-3, MW-47, and MW-48 will be collected for purposes of observation and to support the Groundwater Monitoring Program conducted pursuant to the Consent Decree. Sampling results from LAP-3, MW-47, and MW-48 will not be used to determine whether a statistically significant indication of a release from the Closed Hazardous Waste landfill has occurred, as these wells are not optimally located to make such an assessment.

### 3.2 Proposed Detection Monitoring Parameters

As discussed in Section 2.2.4 of this document, on the basis of landfill leachate sample results, toluene (EPA 8260B), aniline (EPA 8270C), and phenol (EPA 8270C) have been identified as the most appropriate constituents for ongoing groundwater detection monitoring at the Closed Hazardous Waste Landfill. Practical quantitation limits achieved by the referenced analytical procedures are:

- toluene: 1 ug/L;
- aniline: 5 ug/L; and
- phenol: 10 ug/L.

Analytical results will be validated using procedures set forth in the U.S. EPA document *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, and based on validation results, a determination will be made whether or not the collected data is suitable for its intended usage. If the data is deemed unsuitable for the purpose of detection monitoring, the designated well or wells will be resampled and the samples reanalyzed, as appropriate. Sampling and analytical procedures, including the QA/QC specifications for duplicate and blank samples, will be performed in a manner consistent with the approved *Groundwater Monitoring Plan* (submitted August 30, 2000; approved by EPA on April 9, 2001).

Once every two years, a composite sample of leachate will be collected and analyzed for the volatile organic compounds (EPA Method 8260B), semivolatile organic compounds (EPA Method 8270C), Appendix IX metals (EPA Method 6010B and mercury by 7470A), 2-chloroethanol (EPA Method 8015B), triethylamine (EPA Method 8015), and sulfide (Method 376.2). The results of this analysis will be used to review the appropriateness of the detection monitoring parameters.

### 3.3 Proposed Detection Monitoring Statistical Procedures

#### 3.3.1 Basis for Selection

As specified in 40 CFR 264.97(h), several alternative statistical methods can be applied to evaluate groundwater monitoring data. Of these, procedures using non-parametric prediction intervals (40 CFR 264.97(h)(3)), have been determined to be most appropriate for the Groundwater Detection Monitoring Program at the Closed Hazardous



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Waste Landfill due to: i) anticipated non-normality of the data set; and ii) a predominance of non-detectable values for historical groundwater samples (USEPA, 1992; Davis and McNichols, 1994a; and Gibbons, 1994).

For the unit, background data will be collected and used to construct a prediction interval for each monitoring constituent within which future groundwater sample data will likely be contained. If the distributions of background and compliance point data are the same (i.e., in the absence of contamination), all compliance point monitoring samples should be below the individual constituent upper prediction interval limit with a 99% probability. Evidence of groundwater contamination is indicated if one or more of the compliance samples lies above the upper prediction limit for any constituent.

In order to ensure both adequate power and control of the false positive rate, the prediction interval statistical procedure is combined with a resample strategy where a statistically significant increase over background is not recorded unless the constituent concentration in a given monitoring well exceeds the background concentration in both the initial semi-annual sampling event and one or more resample events (USEPA, 1992; Davis and McNichols, 1994b; and Gibbons, 1994). The number of resample events required to achieve an acceptable combination of high power and low false positive rate is dependent on the number of background samples, the number of monitoring wells, and the number of constituents included in the detection monitoring program. Davis and McNichols (1994b) provide a procedure for determining the correct number of resample events for a given program using published tables. The procedure is designed to meet EPA power requirements and EPA guidance criteria of maintaining an approximate 5% overall network-wide false positive rate. Davis and McNichols describe two general types of sampling plans:

- *1 of m plans*, in which an initial sample and all of  $m - 1$  resamples must exceed the prediction limit for a statistically significant increase to be declared.
- *California plans*, in which a statistically significant increase is declared if both the initial sample and any of  $m - 1$  resamples exceed the prediction limit.

Davis and McNichols also present a strategy, or “Modified Addendum Criteria” (MAC), for evaluating the statistical power of a testing procedure: an acceptable procedure should be shown to exhibit a power curve that crosses a reference power curve at a power not much greater than 40 to 80%. The reference test power curve is obtained from a single well comparison with background using a 1% significance level t-test with eight background observations and a normal sample distribution. This strategy deviates slightly from EPA guidance which recommends that a proposed testing procedure have a power “at least as high” as the reference test. However, Davis and McNichols show the EPA guidance to be flawed in that the “at least as high” criterion contradicts the EPA recommendation for maintaining a 5% network-wide false positive rate when more than

five comparisons are made. The selected statistical procedures described below meet both the EPA power criteria and the MAC power criteria.

### **3.3.2 Background Data Collection**

Following installation of the two new monitoring wells (MW-134 and MW-135), five rounds of groundwater sampling for toluene, aniline, and phenol will be conducted at the five wells comprising the monitoring well network. Background sampling will be conducted on a bi-monthly basis (five events over an eight-month period) to expedite the recommencement of the detection monitoring program. The collected data will comprise the background data set for the Closed Hazardous Waste Landfill.

As previously discussed, it is anticipated, based on available GMP data, that the background data set will indicate consistent non-detect values for three monitoring parameters (toluene, aniline, and phenol). Based on this assumption, these three constituents would meet the criteria of IID observations as required for performing analyses using prediction limits (i.e., there is no apparent spatial or systematic temporal variability in the observations; see Davis and McNichols, 1994b). Note that the sampling plan does not include designation of upgradient or downgradient wells. Due to the variability of the groundwater flow direction and the anticipated absence of detections of monitoring parameters in the background data set, groundwater at each of the five wells should be representative of background non-impacted conditions.

As previously discussed, it is anticipated, based on results for existing wells, that the background data set will consist of non-detect results for the selected parameters. If concentrations of toluene, aniline, and/or phenol are measured in any of the wells during collection of the background data set, a demonstration study will be conducted to further investigate the source of the detected constituent(s).

### **3.3.3 Semi-Annual Detection Monitoring**

Following the completion of background sampling, detection monitoring will proceed on a semi-annual frequency, in conjunction with the site-wide groundwater monitoring program conducted under the GMP. Detection monitoring will include the analysis of toluene, aniline, and phenol in each of the five wells comprising the monitoring well network for the Closed Hazardous Waste Landfill.

#### **Determination of Whether a Statistically Significant Indication of a Release is Present**

Based on the background data set, an upper prediction limit (UPL) will be specified for each parameter. For a background data set consisting of non-detect results, the UPL will be equal to the Practical Quantitation Limit (PQL) for that parameter. If a parameter is measured above the UPL, the well will be resampled to determine if the reported concentration is replicated or alternatively, potentially represents a false positive result. If the initial result and the subsequent resample both report a concentration exceeding

the UPL, a statistical significant indication of a release will have been determined to be present.

A summary of the Davis and McNichols procedure for identifying an appropriate sampling plan at the Closed Hazardous Waste Landfill unit is given below. An assumed background data set consisting of 25 total observations for each constituent from MW-32, MW-33, MW-34, MW-134, and MW-135 were used to develop Upper Prediction Limits (UPLs) for the unit. Using the 25 background observations, five POC wells, and three constituents, a “1 of 2” plan gives a per constituent significance level of 0.014. This is below the 0.017 required for a 5% overall false positive rate. The plan also meets a 30% MAC for statistical power, as described by Davis and McNichols (Davis and McNichols, 1994b). This means that the power curve for the selected test crosses the reference power curve at or below the point where the reference curve reaches 30% power, indicating that the selected statistical procedure compares favorably to the reference t-test. Therefore, the proposed “1 of 2” plan will be sufficient to monitor the Closed Hazardous Waste Landfill for a potential release of hazardous constituents.

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### ***Development of Sampling Plan for Closed Hazardous Waste Landfill***

- Number of constituents: 3 (toluene, aniline, phenol)
- Number of monitoring wells: 5 (MW-32, MW-33, MW-34, MW-134, and MW-135)
- Number of background observations: 25 (from 5 wells and five events)
- For an overall network-wide false positive rate of 5%:  
per constituent significance level  $\leq 0.05 / 3$  constituents = 0.017
- For all constituents, let the upper prediction limit (UPL) equal the anticipated largest background observation from the background data set (assumes consistent non-detect results in background data set):

toluene UPL:	1.0 µg/L (PQL)
aniline UPL:	5.0 µg/L (PQL)
phenol UPL:	10.0 µg/L (PQL)

With 5 monitoring wells and 25 background observations per constituent, the “1 of 2” plan (Davis and McNichols, 1994b, Table 2a) gives a per-constituent significance level of 0.014. This is less than 0.017; therefore the plan meets the requirement for a 5% overall network-wide false positive rate.

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### 3.3.4 False Positive Rate Control

Because of the number of constituents and wells in the detection monitoring program, control of the overall monitoring network-wide false positive rate is a concern. The false positive rate for an individual comparison (e.g., one constituent in a single compliance well compared to background) is the probability that the statistical test used for the comparison will falsely indicate contamination. Even if the false positive rate for a single comparison is only 1% (i.e., when a 99% confidence level is applied), with multiple comparisons the overall false positive rate can be quite high (e.g., with 3 constituents and 5 wells (15 comparisons) the overall false positive rate is approximately 15%).

EPA recognizes the need for false positive rate control and recommends the use of prediction limits with an appropriate resampling strategy as a means for controlling false indications of contamination (USEPA, 1992). Under such a program, an initial constituent measurement above the UPL does not automatically indicate evidence of contamination. Rather, a statistically significant increase is declared only if the exceedance is confirmed by subsequent analyses of an independent resample(s) obtained from the same well. In this manner, errors associated with sampling and analysis are minimized. As described above, the prediction interval statistical procedure, combined with a "1 of 2" sampling plan (i.e., one resample) will provide an acceptable false positive rate of  $\leq 5\%$  for the Closed Hazardous Waste Landfill.

The validity of prediction limit testing requires collection of independent samples. This means that resamples, if any, must be separated in time from the initial sampling event. The amount of time required to insure an independent sample is primarily a function of the groundwater flowrate, but also must account for variability in sample collection and laboratory procedures. For any required resampling at the Closed Hazardous Waste Landfill, a resample will be collected within 60 to 90 days following an initial sampling event during which a measurement above the Upper Prediction Limit is observed. The 60 day minimum period will allow for receipt of the laboratory report and evaluation of the laboratory data and for collection of a groundwater sample independent of the initial sample. The 90 day maximum period will allow for timely completion of associated semi-annual monitoring reports.

### 3.3.5 Power Requirements

As described above, the prediction interval statistical procedure has been selected for analysis of the groundwater monitoring data to achieve an acceptable false positive rate. This procedure is combined with a resample strategy consisting of the initial sample and one resample event. This "1 of 2" sampling procedure is presented as "1 Resample" in the EPA guidance document *"Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance, Section 5 (USEPA, 1992)."*



The table at the end of Section 5.2.3, on page 75 of this referenced EPA document lists Non-Parametric re-testing strategies with adequate power under various combinations of number of monitoring wells and number of background samples. As indicated by EPA, “the number of wells could actually represent the number of constituent-well combinations if testing multiple parameters” (Section 5.2.2, p. 71; USEPA, 1992). Thus for the Closed Hazardous Waste Landfill, the number of background samples and “wells” is as follows.

Background samples: 25  
“Wells”: 15 (five wells times three constituents)

The table on page 75 (USEPA, 1992) indicates that a system with 5 “wells” and 16 background samples and a system with 20 “wells” and 16, 24, or 32 background samples will all have adequate power when using the proposed statistical procedure of “1 Resample”. Thus, a system with 15 “wells” and 25 background samples would also have adequate power. Therefore, according to the table on page 75 of the Addendum (USEPA, 1992), the proposed statistical procedure has adequate power.

### **3.4 Demonstration Study**

Consistent with the provisions of 40 CFR 264.98(g)(6), in the event a sample and subsequent resample confirm a detection of a monitoring parameter at a concentration greater than the UPL for that constituent, Morton may elect to demonstrate that a source other than the Closed Hazardous Waste Landfill caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the ground water. If Morton elects to make such a demonstration, Morton will notify EPA and MDEQ in writing of Morton's intent to submit a demonstration. The notification will be submitted to EPA and MDEQ within seven days of issuance of the semiannual report documenting the sample and subsequent resample at a concentration above the UPL. The demonstration study report will be submitted to EPA and MDEQ within 90 days, and will document that a source other than the Closed Hazardous Waste Landfill caused the contamination or that the contamination resulted from error in sampling, analysis, or evaluation.

### **3.5 Corrective Action**

In the event that Morton determines that there is statistically significant evidence of a release from the Closed Hazardous Waste Landfill, the release will be evaluated as part of the ongoing overall site evaluation and corrective action program being performed pursuant to the Consent Decree and 3013 Order. Corrective action alternatives will be evaluated as part of the *Corrective Measures Study Report* specified in the Consent Decree.

### **3.6 Schedule**

The following table presents a proposed schedule for the activities addressed in this report.

Item	Proposed Schedule
Installation of Monitoring Wells MW-134 and MW-135; removal of monitoring well LAP-2.	Monitoring wells MW-134 and MW-135 were installed in May 2005. Proposed monitoring well LAP-2-R was not installed as the Alluvial Aquifer sand horizon was not encountered at depths of other detection monitoring wells during drilling. Therefore, LAP-2 was left in place and not removed. A new detection monitoring well, MW-135, was installed approximately 200 ft south of LAP-2.
Collection of background data set	Collection of background data will involve 5 bi-monthly (every two months) sampling events. Two of the five sampling events will be performed in conjunction with the facility-wide semi-annual groundwater sampling program conducted pursuant to the GMP. All five bi-monthly background sampling events will be collected as proposed (i.e., within a period of eight months), regardless of any changes to the facility-wide groundwater sampling program.
Recommencement of Detection Monitoring at the Closed Hazardous Waste Landfill	Semi-annual detection monitoring will recommence in conjunction with the first semi-annual GMP monitoring episode (November and May) that takes place after completion of the background sampling program.
Biennial leachate sampling	Sampling of leachate will occur every two years beginning in 2007. The detection monitoring parameters will be reviewed for appropriateness based on the results.



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#### 4.0 REFERENCES

- Davis, C.B. and R.J. McNichols, 1994a, "Ground Water Monitoring Statistics Update: Part I: Progress Since 1988," *Ground Water Monitoring & Remediation*, Fall 1994, p. 148-158.
- Davis, C.B. and R.J. McNichols, 1994 b, "Ground Water Monitoring Statistics Update: Part II: Nonparametric Prediction Limits," *Ground Water Monitoring & Remediation*, Fall 1994, p. 159-175.
- Gibbons, R.D., 1994, Statistical Methods for Groundwater Monitoring, John Wiley & Sons, Inc., New York, NY, 1994.
- USEPA, 1992, Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Draft Addendum to Interim Final Guidance, U.S. Environmental Protection Agency, Office of Solid Waste, Washington, DC, July 1992.

*March 29, 2005*  
*Revised: January 13, 2006*



## **MODIFICATIONS TO GROUNDWATER DETECTION MONITORING PROGRAM**

### **Closed Hazardous Waste Landfill**

Morton International, Inc.  
Moss Point, Mississippi

#### **TABLE**

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Table D.1	Monitoring Well Specifications: Alluvial Aquifer Wells, Vicinity of Closed Hazardous Waste Landfill
Table D.2	Closed Hazardous Waste Landfill Leachate Sampling and Testing Results: Detected Compounds



**TABLE D.1  
 MONITORING WELL SPECIFICATIONS  
 ALLUVIAL AQUIFER WELLS, VICINITY OF CLOSED HAZARDOUS WASTE LANDFILL**

Modifications to Groundwater Detection Monitoring Program  
 Closed Hazardous Waste Landfill  
 Morton International, Inc., Moss Point Facility

Well ID	Installation Date	Coordinates		Ground Elevation (ft., MSL)	TOC Elevation (ft., MSL)	Total Depth (ft., BGS)	Screen Interval	
		Easting (US Feet)	Northing (US Feet)				Top (ft., MSL)	Bottom (ft., MSL)
<i>Alluvial Aquifer Monitoring Wells</i>								
MW-16	Jan-85	599729	278343	4.50	7.63	41.5	-25.50	-36.00
MW-32	Apr-88	599602	278256	5.44	7.49	40.0	-19.56	-28.56
MW-33	Apr-88	599606	278129	5.12	7.76	37.0	-16.88	-25.88
MW-34	Apr-88	599510	278043	5.23	7.37	40.0	-14.77	-28.77
MW-47	Jun-93	599644	278642	6.14	7.99	30.0	-3.96	-23.36
MW-48	Jun-93	599215	278639	6.37	9.79	34.9	1.35	-28.03
MW-134	May-05	599435	278633	5.82	9.14	17.0	-0.18	-10.18
MW-135	May-05	599209	278154	5.17	7.80	43.0	-26.83	-36.83
LAP-2	Apr-86	599201	278387	5.94	8.40	15.0	-4.06	-9.06
LAP-3	Apr-86	599205	277910	5.31	7.72	33.0	-14.69	-24.69
LAP-4	Apr-86	599592	277733	6.34	7.11	35.5	-11.16	-26.16

Notes:

- 1) MSL = mean sea level; BGS = below ground surface; TOC = top of casing; NA = data not available
- 2) Coordinate System: State Plane, Mississippi East 2301, NAD 83, U.S. Survey Feet

**TABLE D.2**  
**CLOSED HAZARDOUS WASTE LANDFILL LEACHATE SAMPLING AND TESTING RESULTS:**  
**DETECTED COMPOUNDS**

Moss Point Facility  
 Morton International, Inc., Moss Point, Mississippi

Sample ID:	MH-1	MH-3	MH-6	MH-6	MH-6	MH-8	MH-8	MH-10	MH-10	MH-12	MH-12
Sample Date:	11/15/05	11/15/05	11/15/05	12/01/05	12/07/05	11/15/05	12/01/05	11/15/05	12/01/05	11/15/05	12/01/05
<b>Volatile Organic Compounds</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>
Acetone	<1.300	<1.300	<b>0.730</b>	<b>8.800</b>	NA	<b>6.000</b>	<b>6.600</b>	<b>7.500</b>	<b>7.500</b>	<b>2.000</b>	<b>1.100</b>
Benzene	<0.050	<0.050	<0.001	<0.010	NA	<0.001	<0.005	<0.100	<0.008	<b>0.0011</b>	<0.010
2-Butanone (MEK)	<0.500	<0.500	<b>0.800</b>	<b>13.000</b>	NA	<b>3.700</b>	<b>13.000</b>	<b>3.300</b>	<b>1.400</b>	<b>0.410</b>	<b>0.490</b>
Carbon disulfide	<b>1.100</b>	<b>0.440</b>	<b>0.030</b>	<b>0.290</b>	NA	<b>0.280</b>	<b>0.310</b>	<b>1.200</b>	<b>0.320</b>	<b>0.062</b>	<b>0.400</b>
1,1-Dichloroethane	<0.050	<0.050	<b>0.0061</b>	<b>0.085</b>	NA	<b>0.0099</b>	<b>0.042</b>	<0.100	<b>0.011</b>	<b>0.0034</b>	<0.010
1,2-Dichloroethane	<0.050	<0.050	<0.001	<0.010	NA	<0.001	<b>0.0073</b>	<0.100	<0.008	<0.001	<0.010
cis-1,2-Dichloroethene	<0.050	<0.050	<0.001	<0.010	NA	<0.001	<b>0.0081</b>	<0.100	<0.008	<0.001	<0.010
Ethylbenzene	<0.050	<0.050	<b>0.0027</b>	<b>0.017</b>	NA	<b>0.016</b>	<b>0.047</b>	<0.100	<0.008	<b>0.0073</b>	<0.010
2-Hexanone	<0.500	<0.500	<0.010	<0.100	NA	<0.010	<0.050	<1.000	<0.080	<b>0.040</b>	<0.100
Styrene	<0.050	<0.050	<0.001	<b>0.011</b>	NA	<0.001	<b>0.0063</b>	<0.100	<0.008	<0.001	<0.010
Toluene	<b>0.180</b>	<b>0.092</b>	<b>0.064</b>	<b>0.440</b>	NA	<b>0.290</b>	<b>0.560</b>	<b>0.520</b>	<b>1.200</b>	<b>1.600</b>	<b>1.200</b>
1,2,3-Trichloropropane	<0.050	<0.050	<0.001	<0.010	NA	<0.001	<0.005	<0.100	<0.008	<b>0.0085</b>	<0.010
Xylenes, Total	<0.100	<0.100	<b>0.015</b>	<b>0.0970</b>	NA	<b>0.110</b>	<b>0.290</b>	<0.200	<0.016	<b>0.033</b>	<b>0.034</b>
<b>Total VOCs</b>	<b>1.280</b>	<b>0.532</b>	<b>1.648</b>	<b>22.740</b>	NA	<b>10.406</b>	<b>20.871</b>	<b>12.520</b>	<b>10.431</b>	<b>4.165</b>	<b>3.224</b>
<b>Semivolatile Organic Compounds</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>	<b>mg/L</b>
Acetophenone	<b>0.350</b>	<b>0.250</b>	<0.050	NA	<0.020	<0.050	<0.010	<0.0062	<0.010	<0.010	<0.010
Aniline	<b>3.100</b>	<b>6.900</b>	<b>0.160</b>	NA	<0.040	<b>0.290</b>	<b>0.560</b>	<b>9.900</b>	<b>4.200</b>	<b>16.000</b>	<b>5.900</b>
Benzoic acid	<b>11.000</b>	<b>13.000</b>	<b>20.000</b>	NA	<0.100	<b>14.000</b>	<b>16.000</b>	<b>120.000</b>	<b>190.000</b>	<b>27.000</b>	<b>16.000</b>
1,4-Dioxane	<b>0.280</b>	<b>0.550</b>	<b>0.250</b>	NA	<b>0.390</b>	<b>0.170</b>	<b>0.240</b>	<b>0.110</b>	<b>0.130</b>	<b>0.034</b>	<b>0.026</b>
Phenol	<b>0.760</b>	<b>1.300</b>	<b>1.400</b>	NA	<0.020	<b>3.400</b>	<0.100	<b>2.000</b>	<b>2.700</b>	<b>0.590</b>	<b>0.210</b>
<b>Total SVOCs</b>	<b>15.490</b>	<b>22.000</b>	<b>21.810</b>	NA	<b>0.390</b>	<b>17.860</b>	<b>16.800</b>	<b>132.010</b>	<b>197.030</b>	<b>43.624</b>	<b>22.136</b>

Notes:

- 1) Leachate sampling locations shown on Figure D.4
- 2) Samples analyzed by STL, Mobile, AL; VOCs analyzed by EPA 8260B and SVOCs analyzed by EPA 8270C
- 3) Detected compounds shown in **bold**; < = compound not detected at specified reporting limit
- 4) NA = Constituent not analyzed

*March 29, 2005*  
*Revised: January 13, 2006*



## **MODIFICATIONS TO GROUNDWATER DETECTION MONITORING PROGRAM**

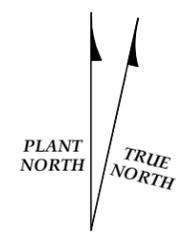
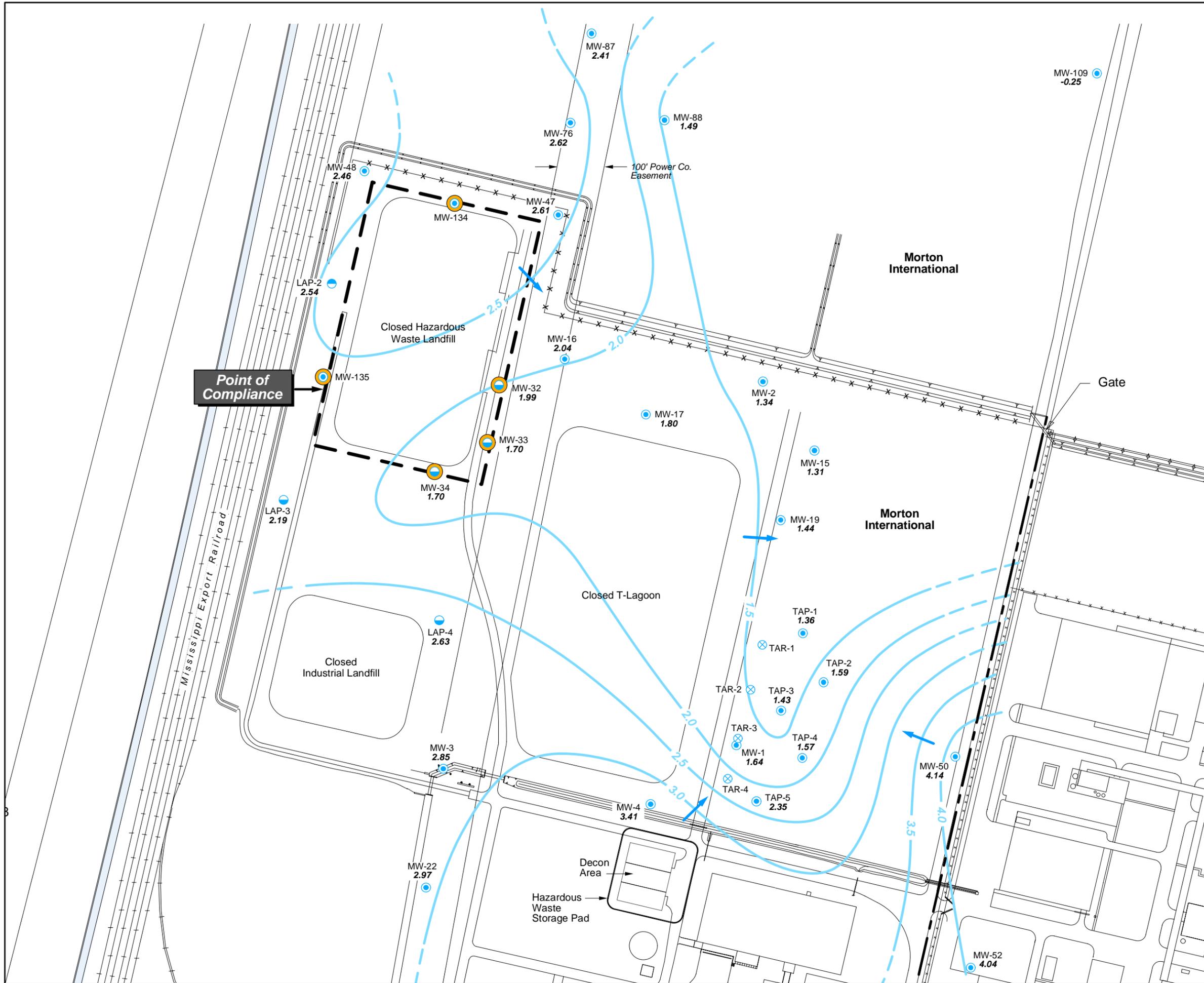
### **Closed Hazardous Waste Landfill**

Morton International, Inc.  
Moss Point, Mississippi

### **FIGURES**

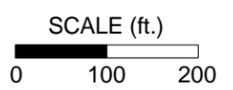
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- Figure D.1 Potentiometric Surface Contour Map Alluvial Aquifer: June 4, 2004
- Figure D.2 Geologic Cross Section A-A': North – South Orientation
- Figure D.3 Geologic Cross Section B-B': West – East Orientation
- Figure D.4 Leachate Collection Sump Location Map



**LEGEND**

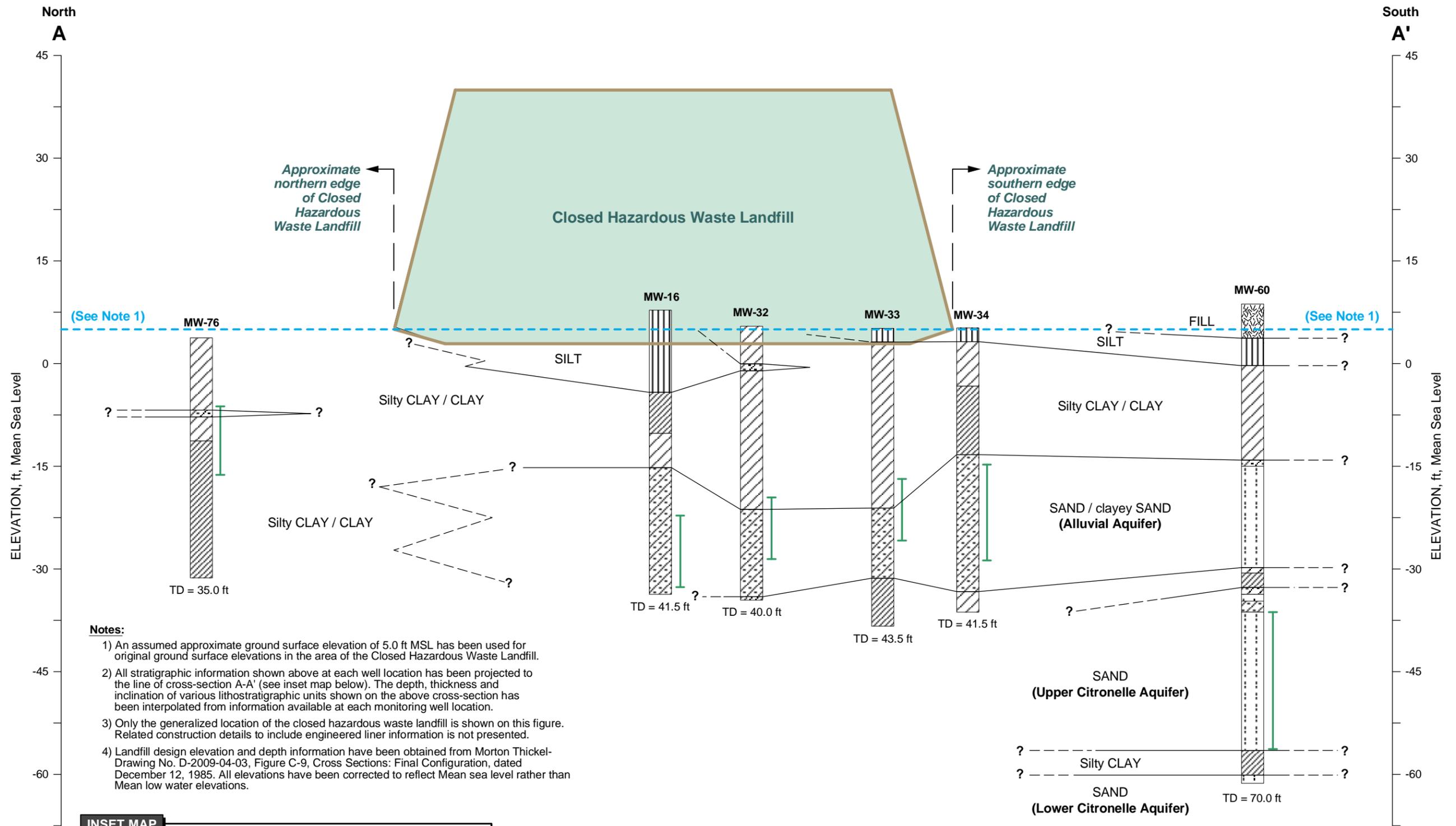
- Monitoring Well, Alluvial Aquifer
- ⊗ Recovery Well, Alluvial Aquifer
- ◐ Downgradient Monitoring Well, Alluvial Aquifer, Current Detection Monitoring Program, Closed Hazardous Waste Landfill
- ◑ Background Monitoring Well, Alluvial Aquifer, Current Detection Monitoring Program, Closed Hazardous Waste Landfill
- Alluvial Aquifer Monitoring Well, Proposed Groundwater Monitoring Program
- - - 1.5 - - - Potentiometric surface contour, ft mean sea level, dashed where inferred
- 1.44** Static water level elevation, ft mean sea level, measured June 6, 2004
- Groundwater flow direction



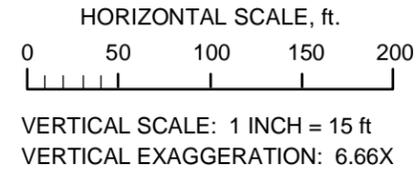
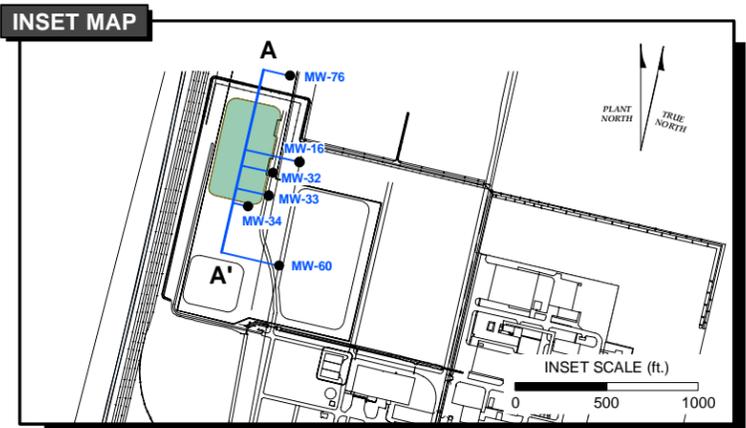
**POTENTIOMETRIC SURFACE  
CONTOUR MAP ALLUVIAL AQUIFER:  
June 4, 2004**

Morton International, Inc.  
Moss Point, Mississippi

GSI Job No:	G-2845	Drawn By:	DLB
Issued:	3/29/05	Chk'd By:	TMM
Revised:	1/09/06	App'd By:	GAC
Scale:	As Shown		<b>FIGURE D.1</b>



- Notes:**
- 1) An assumed approximate ground surface elevation of 5.0 ft MSL has been used for original ground surface elevations in the area of the Closed Hazardous Waste Landfill.
  - 2) All stratigraphic information shown above at each well location has been projected to the line of cross-section A-A' (see inset map below). The depth, thickness and inclination of various lithostratigraphic units shown on the above cross-section has been interpolated from information available at each monitoring well location.
  - 3) Only the generalized location of the closed hazardous waste landfill is shown on this figure. Related construction details to include engineered liner information is not presented.
  - 4) Landfill design elevation and depth information have been obtained from Morton Thicketl-Drawing No. D-2009-04-03, Figure C-9, Cross Sections: Final Configuration, dated December 12, 1985. All elevations have been corrected to reflect Mean sea level rather than Mean low water elevations.



**LEGEND**

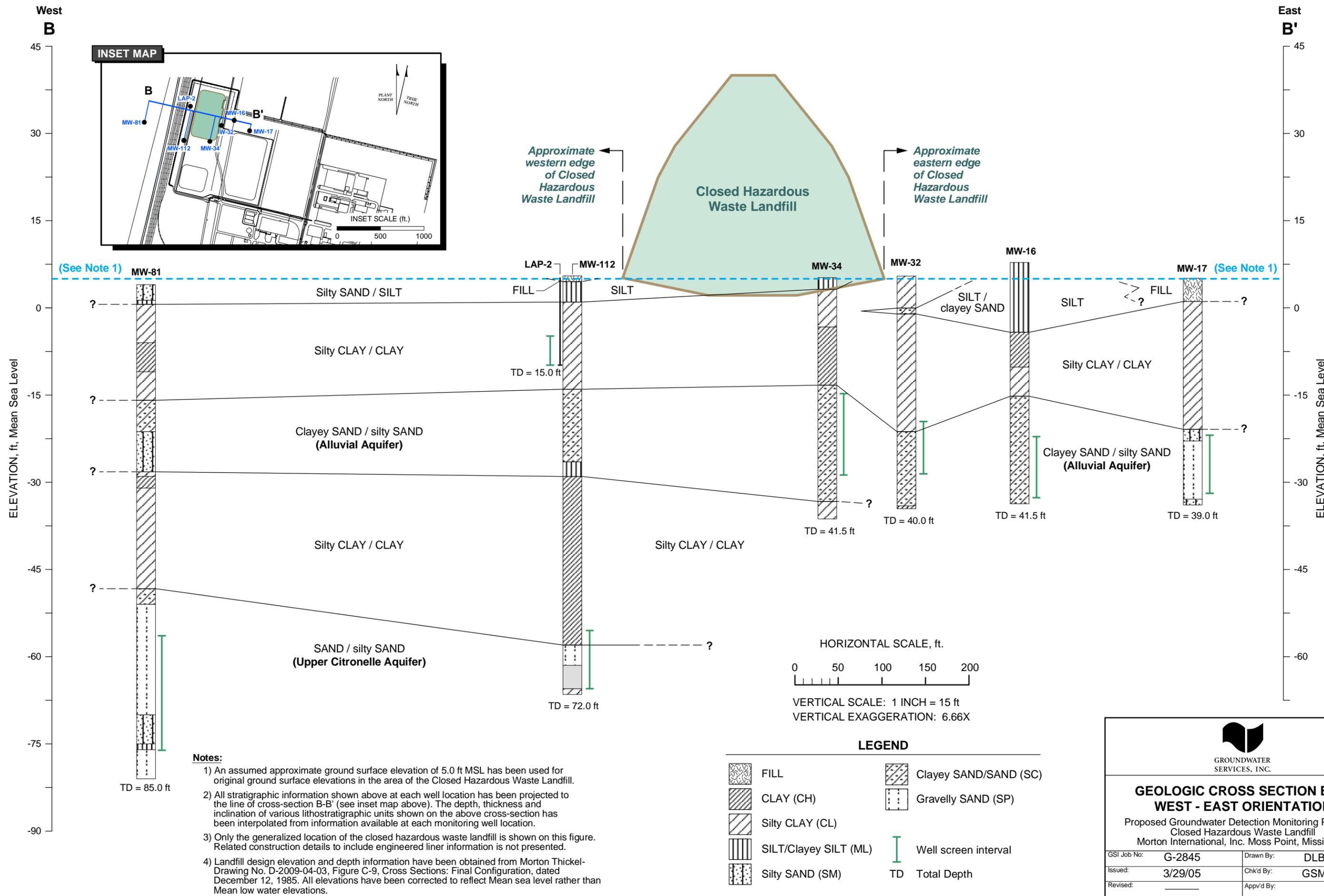
	FILL		Clayey SAND/SAND (SC)
	CLAY (CH)		Gravelly SAND (SP)
	Silty CLAY (CL)		Well screen interval
	SILT/Clayey SILT (ML)		Total Depth
	Silty SAND (SM)		

**GROUNDWATER SERVICES, INC.**

**GEOLOGIC CROSS SECTION A-A':  
NORTH - SOUTH ORIENTATION**

Proposed Groundwater Detection Monitoring Program,  
Closed Hazardous Waste Landfill  
Morton International, Inc. Moss Point, Mississippi

GSI Job No: G-2845	Drawn By: DLB
Issued: 3/29/05	Chk'd By: GSM
Revised:	App'd By:
Scale: As Shown	<b>FIGURE D.2</b>

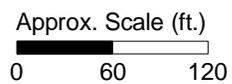
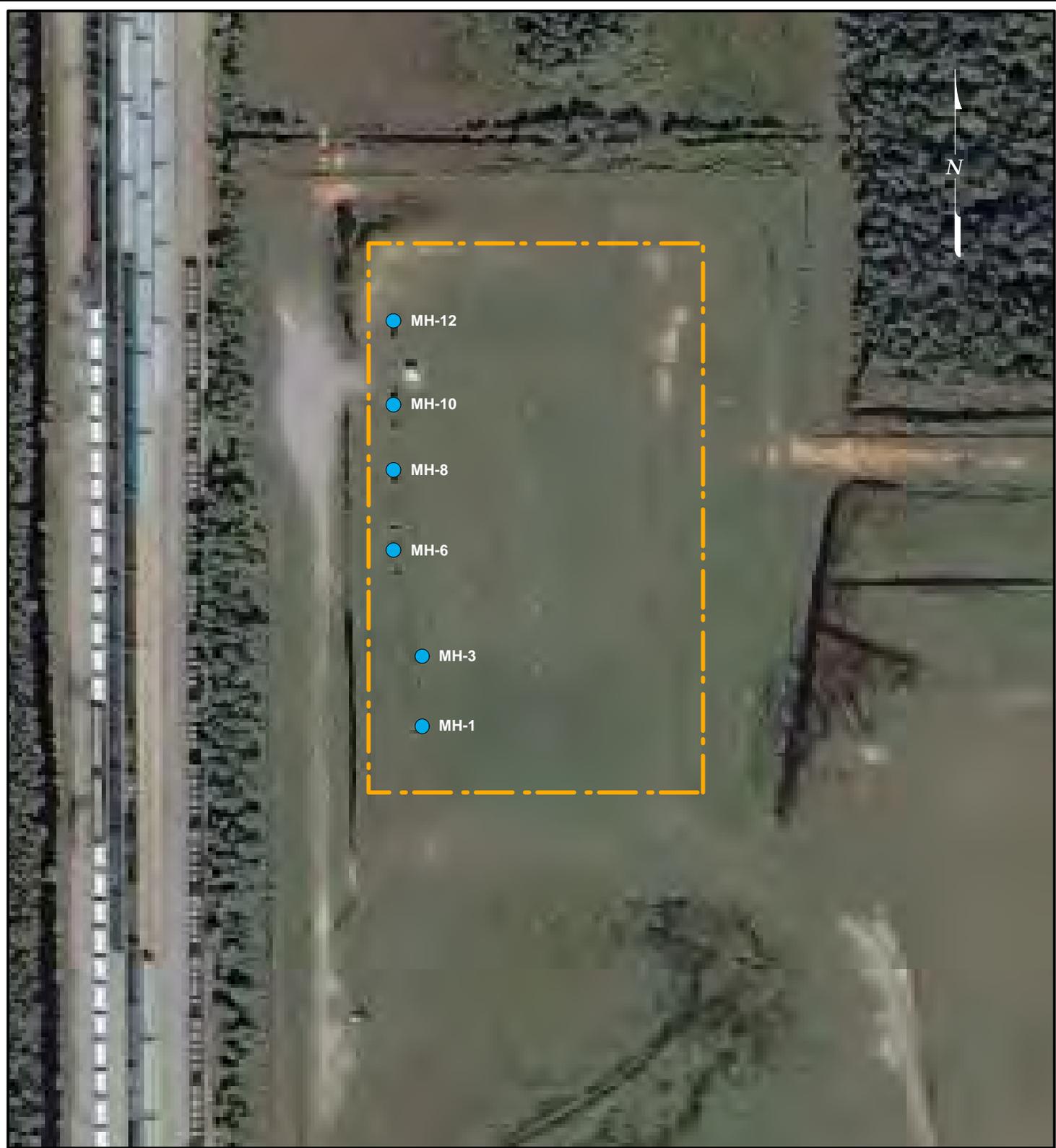


GROUNDWATER SERVICES, INC.

**GEOLOGIC CROSS SECTION B-B':  
WEST - EAST ORIENTATION**

Proposed Groundwater Detection Monitoring Program,  
Closed Hazardous Waste Landfill  
Morton International, Inc. Moss Point, Mississippi

GSI Job No: G-2845	Drawn By: DLB
Issued: 3/29/05	Chk'd By: GSM
Revised:	App'd By:
Scale: As Shown	<b>FIGURE D.3</b>



**LEGEND**

- Leachate collection sump
- - - Approximate boundary of Closed Hazardous Waste Landfill



GROUNDWATER SERVICES, INC.

**LEACHATE COLLECTION SUMP LOCATION MAP**

Morton International, Inc.  
Moss Point, Mississippi

GSI Job No:	G-3000	Drawn By:	DLB
Issued:	01/13/06	Chk'd By:	TMM
Revised:	_____	App'r'd By:	
Scale:	As Shown	<b>FIGURE D.4</b>	

*March 29, 2005*  
*Revised: January 13, 2006*



## **MODIFICATIONS TO GROUNDWATER DETECTION MONITORING PROGRAM**

### **Closed Hazardous Waste Landfill**

Morton International, Inc.  
Moss Point, Mississippi

### **ATTACHMENT**

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Attachment A      Analytical Reports, STL Mobile, Alabama

## ANALYTICAL REPORT

Job Number: 700-7514-1

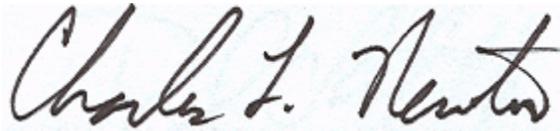
SDG Number: ROHM68

Job Description: Rohm & Haas - Moss Point

For:

Rohm and Haas Company  
1900 Tidal Road  
Deer Park, TX 77536

Attention: Mr. Rick Wenzel

A handwritten signature in black ink that reads "Charles L. Newton". The signature is written in a cursive style and is positioned above a horizontal line.

---

Charles Newton  
Project Manager I  
cnewton@stl-inc.com  
12/08/2005

## METHOD SUMMARY

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

Description	Lab Location	Method	Preparation Method
<b>Matrix: Water</b>			
Volatile Organic Compounds by GC/MS	STL-MOB	SW846 8260B	
Purge-and-Trap	STL-MOB		SW846 5030B
Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	STL-MOB	SW846 8270C	
Continuous Liquid-Liquid Extraction	STL-MOB		SW846 3520C
Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)	STL-MOB	SW846 8015B	
Inductively Coupled Plasma - Atomic Emission Spectrometry	STL-MOB	SW846 6010B	
Acid Digestion of Waters for Total Recoverable or	STL-MOB		SW846 3005A
Mercury in Liquid Waste (Manual Cold Vapor Technique)	STL-MOB	SW846 7470A	
Mercury in Liquid Waste (Manual Cold Vapor	STL-MOB		SW846 7470A

### LAB REFERENCES:

STL-MOB = STL-Mobile

### METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 8260B	Schellinger, Eron	ES
SW846 8270C	Huynh, HoangNam	HH
SW846 8015B	Bendolph, Jackie	JB
SW846 6010B	Ta, Mary	MT
SW846 7470A	Dees, Kelli	KD

## SAMPLE SUMMARY

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
700-7514-1	MH-1	Water	11/15/2005 0950	11/15/2005 1347
700-7514-2	MH-3	Water	11/15/2005 1005	11/15/2005 1347
700-7514-3	MH-6	Water	11/15/2005 1020	11/15/2005 1347
700-7514-4	MH-8	Water	11/15/2005 1033	11/15/2005 1347
700-7514-5	MH-10	Water	11/15/2005 1045	11/15/2005 1347
700-7514-6	MH-12	Water	11/15/2005 1000	11/15/2005 1347
700-7514-7	Trip Blank 1	Water	11/15/2005 0000	11/15/2005 1347
700-7514-8	Trip Blank 2	Water	11/15/2005 0000	11/15/2005 1347

# **SAMPLE RESULTS**

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-1**

Lab Sample ID: 700-7514-1

Date Sampled: 11/15/2005 0950

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111707.D

Dilution: 50

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1107

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1107

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<1300		1300
Acetonitrile	<2000		2000
Acrolein	<1000		1000
Acrylonitrile	<1000		1000
Benzene	<50		50
Bromoform	<50		50
Bromomethane	<50		50
Carbon disulfide	1100		50
Carbon tetrachloride	<50		50
Chlorobenzene	<50		50
2-Chloro-1,3-butadiene	<50		50
Chlorodibromomethane	<50		50
Chloroethane	<50		50
2-Chloroethyl vinyl ether	<500		500
Chloroform	<50		50
Chloromethane	<50		50
3-Chloro-1-propene	<50		50
cis-1,2-Dichloroethene	<50		50
cis-1,3-Dichloropropene	<50		50
1,2-Dibromo-3-Chloropropane	<100		100
Dibromomethane	<50		50
Dichlorobromomethane	<50		50
Dichlorodifluoromethane	<50		50
1,1-Dichloroethane	<50		50
1,2-Dichloroethane	<50		50
1,1-Dichloroethene	<50		50
1,2-Dichloropropane	<50		50
Ethylbenzene	<50		50
Ethylene Dibromide	<50		50
Ethyl methacrylate	<50		50
2-Hexanone	<500		500
Iodomethane	<50		50
Isobutanol	<2000		2000
Methacrylonitrile	<1000		1000
Methylene Chloride	<250		250
Methyl Ethyl Ketone	<500		500
methyl isobutyl ketone	<500		500
Methyl methacrylate	<50		50
Pentachloroethane	<250		250
Propionitrile	<1000		1000
Styrene	<50		50
1,1,1,2-Tetrachloroethane	<50		50
1,1,2,2-Tetrachloroethane	<50		50

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-1**

Lab Sample ID: 700-7514-1

Date Sampled: 11/15/2005 0950

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111707.D

Dilution: 50

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1107

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1107

Analyte	Result (ug/L)	Qualifier	RL
Tetrachloroethene	<50		50
Toluene	180		50
trans-1,4-Dichloro-2-butene	<50		50
trans-1,2-Dichloroethene	<50		50
trans-1,3-Dichloropropene	<50		50
1,1,1-Trichloroethane	<50		50
1,1,2-Trichloroethane	<50		50
Trichloroethene	<50		50
Trichlorofluoromethane	<50		50
1,2,3-Trichloropropane	<50		50
Vinyl acetate	<100		100
Vinyl chloride	<50		50
Xylenes, Total	<100		100
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	107		70 - 118
Dibromofluoromethane	97		66 - 125
Toluene-d8	103		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-3**

Lab Sample ID: 700-7514-2

Date Sampled: 11/15/2005 1005

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111708.D

Dilution: 50

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1136

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1136

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<1300		1300
Acetonitrile	<2000		2000
Acrolein	<1000		1000
Acrylonitrile	<1000		1000
Benzene	<50		50
Bromoform	<50		50
Bromomethane	<50		50
Carbon disulfide	440		50
Carbon tetrachloride	<50		50
Chlorobenzene	<50		50
2-Chloro-1,3-butadiene	<50		50
Chlorodibromomethane	<50		50
Chloroethane	<50		50
2-Chloroethyl vinyl ether	<500		500
Chloroform	<50		50
Chloromethane	<50		50
3-Chloro-1-propene	<50		50
cis-1,2-Dichloroethene	<50		50
cis-1,3-Dichloropropene	<50		50
1,2-Dibromo-3-Chloropropane	<100		100
Dibromomethane	<50		50
Dichlorobromomethane	<50		50
Dichlorodifluoromethane	<50		50
1,1-Dichloroethane	<50		50
1,2-Dichloroethane	<50		50
1,1-Dichloroethene	<50		50
1,2-Dichloropropane	<50		50
Ethylbenzene	<50		50
Ethylene Dibromide	<50		50
Ethyl methacrylate	<50		50
2-Hexanone	<500		500
Iodomethane	<50		50
Isobutanol	<2000		2000
Methacrylonitrile	<1000		1000
Methylene Chloride	<250		250
Methyl Ethyl Ketone	<500		500
methyl isobutyl ketone	<500		500
Methyl methacrylate	<50		50
Pentachloroethane	<250		250
Propionitrile	<1000		1000
Styrene	<50		50
1,1,1,2-Tetrachloroethane	<50		50
1,1,2,2-Tetrachloroethane	<50		50

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-3**

Lab Sample ID: 700-7514-2

Date Sampled: 11/15/2005 1005

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111708.D

Dilution: 50

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1136

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1136

Analyte	Result (ug/L)	Qualifier	RL
Tetrachloroethene	<50		50
Toluene	92		50
trans-1,4-Dichloro-2-butene	<50		50
trans-1,2-Dichloroethene	<50		50
trans-1,3-Dichloropropene	<50		50
1,1,1-Trichloroethane	<50		50
1,1,2-Trichloroethane	<50		50
Trichloroethene	<50		50
Trichlorofluoromethane	<50		50
1,2,3-Trichloropropane	<50		50
Vinyl acetate	<100		100
Vinyl chloride	<50		50
Xylenes, Total	<100		100
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	109		70 - 118
Dibromofluoromethane	95		66 - 125
Toluene-d8	102		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-6**

Lab Sample ID: 700-7514-3

Date Sampled: 11/15/2005 1020

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111709.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1205

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1205

Analyte	Result (ug/L)	Qualifier	RL
Acetone	730		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	30		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
2-Chloroethyl vinyl ether	<10		10
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<2.0		2.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	6.1		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	2.7		1.0
Ethylene Dibromide	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<1.0		1.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl Ethyl Ketone	800		10
methyl isobutyl ketone	<10		10
Methyl methacrylate	<1.0		1.0
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-6**

Lab Sample ID: 700-7514-3

Date Sampled: 11/15/2005 1020

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111709.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1205

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1205

Analyte	Result (ug/L)	Qualifier	RL
Tetrachloroethene	<1.0		1.0
Toluene	64		1.0
trans-1,4-Dichloro-2-butene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	15		2.0
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	111		70 - 118
Dibromofluoromethane	93		66 - 125
Toluene-d8	103		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4

Date Sampled: 11/15/2005 1033

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111710.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1234

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1234

Analyte	Result (ug/L)	Qualifier	RL
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	280		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
2-Chloroethyl vinyl ether	<10		10
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<2.0		2.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	9.9		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	16		1.0
Ethylene Dibromide	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<1.0		1.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
methyl isobutyl ketone	<10		10
Methyl methacrylate	<1.0		1.0
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0
Toluene	290		1.0

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4

Date Sampled: 11/15/2005 1033

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111710.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1234

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1234

Analyte	Result (ug/L)	Qualifier	RL
trans-1,4-Dichloro-2-butene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	110		2.0
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	112		70 - 118
Dibromofluoromethane	97		66 - 125
Toluene-d8	103		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4

Date Sampled: 11/15/2005 1033

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111715.D

Dilution: 50

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1459

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1459

Analyte	Result (ug/L)	Qualifier	RL
Acetone	6000		1300
Methyl Ethyl Ketone	3700		500
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	106		70 - 118
Dibromofluoromethane	94		66 - 125
Toluene-d8	103		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-10**

Lab Sample ID: 700-7514-5

Date Sampled: 11/15/2005 1045

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111711.D

Dilution: 100

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1303

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1303

Analyte	Result (ug/L)	Qualifier	RL
Acetone	7500		2500
Acetonitrile	<4000		4000
Acrolein	<2000		2000
Acrylonitrile	<2000		2000
Benzene	<100		100
Bromoform	<100		100
Bromomethane	<100		100
Carbon disulfide	1200		100
Carbon tetrachloride	<100		100
Chlorobenzene	<100		100
2-Chloro-1,3-butadiene	<100		100
Chlorodibromomethane	<100		100
Chloroethane	<100		100
2-Chloroethyl vinyl ether	<1000		1000
Chloroform	<100		100
Chloromethane	<100		100
3-Chloro-1-propene	<100		100
cis-1,2-Dichloroethene	<100		100
cis-1,3-Dichloropropene	<100		100
1,2-Dibromo-3-Chloropropane	<200		200
Dibromomethane	<100		100
Dichlorobromomethane	<100		100
Dichlorodifluoromethane	<100		100
1,1-Dichloroethane	<100		100
1,2-Dichloroethane	<100		100
1,1-Dichloroethene	<100		100
1,2-Dichloropropane	<100		100
Ethylbenzene	<100		100
Ethylene Dibromide	<100		100
Ethyl methacrylate	<100		100
2-Hexanone	<1000		1000
Iodomethane	<100		100
Isobutanol	<4000		4000
Methacrylonitrile	<2000		2000
Methylene Chloride	<500		500
Methyl Ethyl Ketone	3300		1000
methyl isobutyl ketone	<1000		1000
Methyl methacrylate	<100		100
Pentachloroethane	<500		500
Propionitrile	<2000		2000
Styrene	<100		100
1,1,1,2-Tetrachloroethane	<100		100
1,1,2,2-Tetrachloroethane	<100		100

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-10**

Lab Sample ID: 700-7514-5

Date Sampled: 11/15/2005 1045

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111711.D

Dilution: 100

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1303

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1303

Analyte	Result (ug/L)	Qualifier	RL
Tetrachloroethene	<100		100
Toluene	520		100
trans-1,4-Dichloro-2-butene	<100		100
trans-1,2-Dichloroethene	<100		100
trans-1,3-Dichloropropene	<100		100
1,1,1-Trichloroethane	<100		100
1,1,2-Trichloroethane	<100		100
Trichloroethene	<100		100
Trichlorofluoromethane	<100		100
1,2,3-Trichloropropane	<100		100
Vinyl acetate	<200		200
Vinyl chloride	<100		100
Xylenes, Total	<200		200
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	111		70 - 118
Dibromofluoromethane	92		66 - 125
Toluene-d8	103		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-12**

Lab Sample ID: 700-7514-6

Date Sampled: 11/15/2005 1000

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111712.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1332

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1332

Analyte	Result (ug/L)	Qualifier	RL
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	1.1		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	62		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
2-Chloroethyl vinyl ether	<10		10
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<2.0		2.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	3.4		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	7.3		1.0
Ethylene Dibromide	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	40		10
Iodomethane	<1.0		1.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl Ethyl Ketone	410		10
methyl isobutyl ketone	<10		10
Methyl methacrylate	<1.0		1.0
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-12**

Lab Sample ID: 700-7514-6

Date Sampled: 11/15/2005 1000

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111712.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1332

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1332

Analyte	Result (ug/L)	Qualifier	RL
trans-1,4-Dichloro-2-butene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	8.5		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	33		2.0
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	111		70 - 118
Dibromofluoromethane	96		66 - 125
Toluene-d8	104		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-12**

Lab Sample ID: 700-7514-6

Date Sampled: 11/15/2005 1000

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111716.D

Dilution: 50

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1527

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1527

Analyte	Result (ug/L)	Qualifier	RL
Acetone	2000		1300
Toluene	1600		50
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	109		70 - 118
Dibromofluoromethane	93		66 - 125
Toluene-d8	102		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: Trip Blank 1**

Lab Sample ID: 700-7514-7

Date Sampled: 11/15/2005 0000

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111720.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1723

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1723

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	<1.0		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
2-Chloroethyl vinyl ether	<10		10
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<2.0		2.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<1.0		1.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl Ethyl Ketone	<10		10
methyl isobutyl ketone	<10		10
Methyl methacrylate	<1.0		1.0
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: Trip Blank 1**

Lab Sample ID: 700-7514-7

Date Sampled: 11/15/2005 0000

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111720.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1723

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1723

Analyte	Result (ug/L)	Qualifier	RL
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
trans-1,4-Dichloro-2-butene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	107		70 - 118
Dibromofluoromethane	97		66 - 125
Toluene-d8	103		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: Trip Blank 2**

Lab Sample ID: 700-7514-8

Date Sampled: 11/15/2005 0000

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111721.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1752

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1752

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	<1.0		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
2-Chloroethyl vinyl ether	<10		10
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<2.0		2.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<1.0		1.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl Ethyl Ketone	<10		10
methyl isobutyl ketone	<10		10
Methyl methacrylate	<1.0		1.0
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: Trip Blank 2**

Lab Sample ID: 700-7514-8

Date Sampled: 11/15/2005 0000

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8260B Volatile Organic Compounds by GC/MS

Method: 8260B

Analysis Batch: 700-14065

Instrument ID: VMF5973

Preparation: 5030B

Lab File ID: F111721.D

Dilution: 1.0

Initial Weight/Volume: 5 mL

Date Analyzed: 11/17/2005 1752

Final Weight/Volume: 5 mL

Date Prepared: 11/17/2005 1752

Analyte	Result (ug/L)	Qualifier	RL
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
trans-1,4-Dichloro-2-butene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0
Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	107		70 - 118
Dibromofluoromethane	100		66 - 125
Toluene-d8	102		77 - 116

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

Client Sample ID: MH-1

Lab Sample ID: 700-7514-1

Date Sampled: 11/15/2005 0950

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A111813.D
Dilution:	2.0		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/18/2005 1639		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Acenaphthene	<50		50
Acenaphthylene	<50		50
Acetophenone	350		50
2-Acetylaminofluorene	<50		50
alpha,alpha-Dimethyl phenethylamine	<10000		10000
4-Aminobiphenyl	<50		50
Anthracene	<50		50
Aramite, Total	<50		50
Benzidine	<400		400
Benzo[a]anthracene	<50		50
Benzo[a]pyrene	<50		50
Benzo[b]fluoranthene	<50		50
Benzo[g,h,i]perylene	<50		50
Benzo[k]fluoranthene	<50		50
Benzyl alcohol	<50		50
Bis(2-chloroethoxy)methane	<50		50
Bis(2-chloroethyl)ether	<50		50
Bis(2-ethylhexyl) phthalate	<50		50
4-Bromophenyl phenyl ether	<50		50
Butyl benzyl phthalate	<50		50
Carbazole	<50		50
4-Chloroaniline	<50		50
4-Chloro-3-methylphenol	<50		50
2-Chloronaphthalene	<50		50
2-Chlorophenol	<50		50
4-Chlorophenyl phenyl ether	<50		50
Chrysene	<50		50
Diallate	<50		50
Dibenz(a,h)anthracene	<50		50
Dibenzofuran	<50		50
1,2-Dichlorobenzene	<50		50
1,3-Dichlorobenzene	<50		50
1,4-Dichlorobenzene	<50		50
3,3'-Dichlorobenzidine	<100		100
2,4-Dichlorophenol	<50		50
2,6-Dichlorophenol	<50		50
Diethyl phthalate	<50		50
Dimethoate	<50		50
7,12-Dimethylbenz(a)anthracene	<50		50
3,3'-Dimethylbenzidine	<100		100
2,4-Dimethylphenol	<50		50
Dimethyl phthalate	<50		50
Di-n-butyl phthalate	<50		50

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-1**

Lab Sample ID: 700-7514-1

Date Sampled: 11/15/2005 0950

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	700-14390	Instrument ID:	SMA5972
Preparation:	3520C	Prep Batch:	700-14016	Lab File ID:	A111813A.D
Dilution:	2.0			Initial Weight/Volume:	1000 mL
Date Analyzed:	11/18/2005 1639			Final Weight/Volume:	5.0 mL
Date Prepared:	11/17/2005 0745			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL
1,3-Dinitrobenzene	<50		50
1,4-Dinitrobenzene	<50		50
4,6-Dinitro-2-methylphenol	<250		250
2,4-Dinitrophenol	<250		250
2,4-Dinitrotoluene	<50		50
2,6-Dinitrotoluene	<50		50
Di-n-octyl phthalate	<50		50
Dinoseb	<50		50
1,4-Dioxane	280		50
Diphenylamine	<50		50
1,2-Diphenylhydrazine	<50		50
Ethyl methanesulfonate	<50		50
Fluoranthene	<50		50
Fluorene	<50		50
Hexachlorobenzene	<50		50
Hexachlorobutadiene	<50		50
Hexachlorocyclopentadiene	<50		50
Hexachloroethane	<50		50
Hexachlorophene	<25000		25000
Hexachloropropene	<50		50
Indeno[1,2,3-cd]pyrene	<50		50
Isophorone	<50		50
Isosafrole	<50		50
Kepone	<50		50
Methapyrilene	<10000		10000
3-Methylcholanthrene	<50		50
Methyl methanesulfonate	<50		50
1-Methylnaphthalene	<50		50
2-Methylnaphthalene	<50		50
2-Methylphenol	<50		50
3 & 4 Methylphenol	<50		50
Naphthalene	<50		50
1,4-Naphthoquinone	<50		50
1-Naphthylamine	<50		50
2-Naphthylamine	<50		50
2-Nitroaniline	<250		250
3-Nitroaniline	<250		250
4-Nitroaniline	<250		250
Nitrobenzene	<50		50
5-Nitro-o-toluidine	<50		50
2-Nitrophenol	<250		250
4-Nitrophenol	<250		250
4-Nitroquinoline-1-oxide	<100		100

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-1**

Lab Sample ID: 700-7514-1

Date Sampled: 11/15/2005 0950

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation: 3520C	Prep Batch: 700-14016	Lab File ID: A111813A.D
Dilution: 2.0		Initial Weight/Volume: 1000 mL
Date Analyzed: 11/18/2005 1639		Final Weight/Volume: 5.0 mL
Date Prepared: 11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
N-Nitrosodiethylamine	<50		50
N-Nitrosodimethylamine	<50		50
N-Nitrosodi-n-butylamine	<50		50
N-Nitrosodi-n-propylamine	<50		50
N-Nitrosodiphenylamine	<50		50
n-Nitrosomethylethylamine	<50		50
N-Nitrosomorpholine	<50		50
N-Nitrosopiperidine	<50		50
N-Nitrosopyrrolidine	<50		50
o,o',o"-Triethylphosphorothioate	<50		50
2,2'-oxybis(2-chloropropane)	<50		50
p-Dimethylamino azobenzene	<50		50
Pentachlorobenzene	<50		50
Pentachloronitrobenzene	<50		50
Pentachlorophenol	<250		250
Phenanthrene	<50		50
Phenol	760		50
2-Picoline	<50		50
p-Phenylene diamine	<10000		10000
Pronamide	<50		50
Pyrene	<50		50
Pyridine	<250		250
Safrole, Total	<50		50
1,2,3,4 -Tetrachlorobenzene	<50		50
1,2,3,5-Tetrachlorobenzene	<50		50
1,2,4,5-Tetrachlorobenzene	<50		50
Tetrachlorophenol	<50		50
2-Toluidine	<50		50
1,2,4-Trichlorobenzene	<50		50
2,4,5-Trichlorophenol	<50		50
2,4,6-Trichlorophenol	<50		50
1,3,5-Trinitrobenzene	<50		50
Surrogate	%Rec		Acceptance Limits
Terphenyl-d14	89		16 - 158
2,4,6-Tribromophenol	66		14 - 93
2-Fluorobiphenyl	48		34 - 118
2-Fluorophenol	48		25 - 102
Nitrobenzene-d5	46		39 - 133
Phenol-d5	56		21 - 95

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-1**

Lab Sample ID: 700-7514-1

Date Sampled: 11/15/2005 0950

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 700-14390

Instrument ID: SMA5972

Preparation: 3520C

Prep Batch: 700-14016

Lab File ID: A111804.D

Dilution: 5.0

Initial Weight/Volume: 1000 mL

Date Analyzed: 11/18/2005 1138

Final Weight/Volume: 5.0 mL

Date Prepared: 11/17/2005 0745

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Aniline	3100		250

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-1**

Lab Sample ID: 700-7514-1

Date Sampled: 11/15/2005 0950

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 700-14390

Instrument ID: SMA5972

Preparation: 3520C

Prep Batch: 700-14016

Lab File ID: A112215.D

Dilution: 25

Initial Weight/Volume: 1000 mL

Date Analyzed: 11/22/2005 1704

Final Weight/Volume: 5.0 mL

Date Prepared: 11/17/2005 0745

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Benzoic acid	11000		3100

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

Client Sample ID: MH-3

Lab Sample ID: 700-7514-2

Date Sampled: 11/15/2005 1005

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A111814.D
Dilution:	2.0		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/18/2005 1713		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Acenaphthene	<50		50
Acenaphthylene	<50		50
Acetophenone	250		50
2-Acetylaminofluorene	<50		50
alpha,alpha-Dimethyl phenethylamine	<10000		10000
4-Aminobiphenyl	<50		50
Anthracene	<50		50
Aramite, Total	<50		50
Benzidine	<400		400
Benzo[a]anthracene	<50		50
Benzo[a]pyrene	<50		50
Benzo[b]fluoranthene	<50		50
Benzo[g,h,i]perylene	<50		50
Benzo[k]fluoranthene	<50		50
Benzyl alcohol	<50		50
Bis(2-chloroethoxy)methane	<50		50
Bis(2-chloroethyl)ether	<50		50
Bis(2-ethylhexyl) phthalate	<50		50
4-Bromophenyl phenyl ether	<50		50
Butyl benzyl phthalate	<50		50
Carbazole	<50		50
4-Chloroaniline	<50		50
4-Chloro-3-methylphenol	<50		50
2-Chloronaphthalene	<50		50
2-Chlorophenol	<50		50
4-Chlorophenyl phenyl ether	<50		50
Chrysene	<50		50
Diallate	<50		50
Dibenz(a,h)anthracene	<50		50
Dibenzofuran	<50		50
1,2-Dichlorobenzene	<50		50
1,3-Dichlorobenzene	<50		50
1,4-Dichlorobenzene	<50		50
3,3'-Dichlorobenzidine	<100		100
2,4-Dichlorophenol	<50		50
2,6-Dichlorophenol	<50		50
Diethyl phthalate	<50		50
Dimethoate	<50		50
7,12-Dimethylbenz(a)anthracene	<50		50
3,3'-Dimethylbenzidine	<100		100
2,4-Dimethylphenol	<50		50
Dimethyl phthalate	<50		50
Di-n-butyl phthalate	<50		50

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-3**

Lab Sample ID: 700-7514-2

Date Sampled: 11/15/2005 1005

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	700-14390	Instrument ID:	SMA5972
Preparation:	3520C	Prep Batch:	700-14016	Lab File ID:	A111814A.D
Dilution:	2.0			Initial Weight/Volume:	1000 mL
Date Analyzed:	11/18/2005 1713			Final Weight/Volume:	5.0 mL
Date Prepared:	11/17/2005 0745			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL
1,3-Dinitrobenzene	<50		50
1,4-Dinitrobenzene	<50		50
4,6-Dinitro-2-methylphenol	<250		250
2,4-Dinitrophenol	<250		250
2,4-Dinitrotoluene	<50		50
2,6-Dinitrotoluene	<50		50
Di-n-octyl phthalate	<50		50
Dinoseb	<50		50
1,4-Dioxane	550		50
Diphenylamine	<50		50
1,2-Diphenylhydrazine	<50		50
Ethyl methanesulfonate	<50		50
Fluoranthene	<50		50
Fluorene	<50		50
Hexachlorobenzene	<50		50
Hexachlorobutadiene	<50		50
Hexachlorocyclopentadiene	<50		50
Hexachloroethane	<50		50
Hexachlorophene	<25000		25000
Hexachloropropene	<50		50
Indeno[1,2,3-cd]pyrene	<50		50
Isophorone	<50		50
Isosafrole	<50		50
Kepone	<50		50
Methapyrilene	<10000		10000
3-Methylcholanthrene	<50		50
Methyl methanesulfonate	<50		50
1-Methylnaphthalene	<50		50
2-Methylnaphthalene	<50		50
2-Methylphenol	<50		50
3 & 4 Methylphenol	<50		50
Naphthalene	<50		50
1,4-Naphthoquinone	<50		50
1-Naphthylamine	<50		50
2-Naphthylamine	<50		50
2-Nitroaniline	<250		250
3-Nitroaniline	<250		250
4-Nitroaniline	<250		250
Nitrobenzene	<50		50
5-Nitro-o-toluidine	<50		50
2-Nitrophenol	<250		250
4-Nitrophenol	<250		250
4-Nitroquinoline-1-oxide	<100		100

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-3**

Lab Sample ID: 700-7514-2

Date Sampled: 11/15/2005 1005

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation: 3520C	Prep Batch: 700-14016	Lab File ID: A111814A.D
Dilution: 2.0		Initial Weight/Volume: 1000 mL
Date Analyzed: 11/18/2005 1713		Final Weight/Volume: 5.0 mL
Date Prepared: 11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
N-Nitrosodiethylamine	<50		50
N-Nitrosodimethylamine	<50		50
N-Nitrosodi-n-butylamine	<50		50
N-Nitrosodi-n-propylamine	<50		50
N-Nitrosodiphenylamine	<50		50
n-Nitrosomethylethylamine	<50		50
N-Nitrosomorpholine	<50		50
N-Nitrosopiperidine	<50		50
N-Nitrosopyrrolidine	<50		50
o,o',o"-Triethylphosphorothioate	<50		50
2,2'-oxybis(2-chloropropane)	<50		50
p-Dimethylamino azobenzene	<50		50
Pentachlorobenzene	<50		50
Pentachloronitrobenzene	<50		50
Pentachlorophenol	<250		250
Phenanthrene	<50		50
Phenol	1300		50
2-Picoline	<50		50
p-Phenylene diamine	<10000		10000
Pronamide	<50		50
Pyrene	<50		50
Pyridine	<250		250
Safrole, Total	<50		50
1,2,3,4 -Tetrachlorobenzene	<50		50
1,2,3,5-Tetrachlorobenzene	<50		50
1,2,4,5-Tetrachlorobenzene	<50		50
Tetrachlorophenol	<50		50
2-Toluidine	<50		50
1,2,4-Trichlorobenzene	<50		50
2,4,5-Trichlorophenol	<50		50
2,4,6-Trichlorophenol	<50		50
1,3,5-Trinitrobenzene	<50		50
Surrogate	%Rec		Acceptance Limits
Terphenyl-d14	57		16 - 158
2,4,6-Tribromophenol	79		14 - 93
2-Fluorobiphenyl	37		34 - 118
2-Fluorophenol	38		25 - 102
Nitrobenzene-d5	46		39 - 133
Phenol-d5	41		21 - 95

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-3**

Lab Sample ID: 700-7514-2

Date Sampled: 11/15/2005 1005

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14456	Instrument ID: Agilent GC/MS 5973
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: D112103.D
Dilution:	25		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/21/2005 1439		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Benzoic acid	13000		3100

Method:	8270C	Analysis Batch: 700-14456	Instrument ID: Agilent GC/MS 5973
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: D112103.D
Dilution:	25		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/21/2005 1439		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Aniline	6900		1300

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

Client Sample ID: MH-6

Lab Sample ID: 700-7514-3

Date Sampled: 11/15/2005 1020

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A111815.D
Dilution:	2.0		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/18/2005 1747		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Acenaphthene	<50		50
Acenaphthylene	<50		50
Acetophenone	<50		50
2-Acetylaminofluorene	<50		50
alpha,alpha-Dimethyl phenethylamine	<10000		10000
4-Aminobiphenyl	<50		50
Aniline	160		100
Anthracene	<50		50
Aramite, Total	<50		50
Benzidine	<400		400
Benzo[a]anthracene	<50		50
Benzo[a]pyrene	<50		50
Benzo[b]fluoranthene	<50		50
Benzo[g,h,i]perylene	<50		50
Benzo[k]fluoranthene	<50		50
Benzyl alcohol	<50		50
Bis(2-chloroethoxy)methane	<50		50
Bis(2-chloroethyl)ether	<50		50
Bis(2-ethylhexyl) phthalate	<50		50
4-Bromophenyl phenyl ether	<50		50
Butyl benzyl phthalate	<50		50
Carbazole	<50		50
4-Chloroaniline	<50		50
4-Chloro-3-methylphenol	<50		50
2-Chloronaphthalene	<50		50
2-Chlorophenol	<50		50
4-Chlorophenyl phenyl ether	<50		50
Chrysene	<50		50
Diallate	<50		50
Dibenz(a,h)anthracene	<50		50
Dibenzofuran	<50		50
1,2-Dichlorobenzene	<50		50
1,3-Dichlorobenzene	<50		50
1,4-Dichlorobenzene	<50		50
3,3'-Dichlorobenzidine	<100		100
2,4-Dichlorophenol	<50		50
2,6-Dichlorophenol	<50		50
Diethyl phthalate	<50		50
Dimethoate	<50		50
7,12-Dimethylbenz(a)anthracene	<50		50
3,3'-Dimethylbenzidine	<100		100
2,4-Dimethylphenol	<50		50
Dimethyl phthalate	<50		50

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-6**

Lab Sample ID: 700-7514-3

Date Sampled: 11/15/2005 1020

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	700-14390	Instrument ID:	SMA5972
Preparation:	3520C	Prep Batch:	700-14016	Lab File ID:	A111815.D
Dilution:	2.0			Initial Weight/Volume:	1000 mL
Date Analyzed:	11/18/2005 1747			Final Weight/Volume:	5.0 mL
Date Prepared:	11/17/2005 0745			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL
Di-n-butyl phthalate	<50		50
1,3-Dinitrobenzene	<50		50
1,4-Dinitrobenzene	<50		50
4,6-Dinitro-2-methylphenol	<250		250
2,4-Dinitrophenol	<250		250
2,4-Dinitrotoluene	<50		50
2,6-Dinitrotoluene	<50		50
Di-n-octyl phthalate	<50		50
Dinoseb	<50		50
1,4-Dioxane	250		50
Diphenylamine	<50		50
1,2-Diphenylhydrazine	<50		50
Ethyl methanesulfonate	<50		50
Fluoranthene	<50		50
Fluorene	<50		50
Hexachlorobenzene	<50		50
Hexachlorobutadiene	<50		50
Hexachlorocyclopentadiene	<50		50
Hexachloroethane	<50		50
Hexachlorophene	<25000		25000
Hexachloropropene	<50		50
Indeno[1,2,3-cd]pyrene	<50		50
Isophorone	<50		50
Isosafrole	<50		50
Kepone	<50		50
Methapyrilene	<10000		10000
3-Methylcholanthrene	<50		50
Methyl methanesulfonate	<50		50
1-Methylnaphthalene	<50		50
2-Methylnaphthalene	<50		50
2-Methylphenol	<50		50
3 & 4 Methylphenol	<50		50
Naphthalene	<50		50
1,4-Naphthoquinone	<50		50
1-Naphthylamine	<50		50
2-Naphthylamine	<50		50
2-Nitroaniline	<250		250
3-Nitroaniline	<250		250
4-Nitroaniline	<250		250
Nitrobenzene	<50		50
5-Nitro-o-toluidine	<50		50
2-Nitrophenol	<250		250
4-Nitrophenol	<250		250

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-6**

Lab Sample ID: 700-7514-3

Date Sampled: 11/15/2005 1020

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation: 3520C	Prep Batch: 700-14016	Lab File ID: A111815A.D
Dilution: 2.0		Initial Weight/Volume: 1000 mL
Date Analyzed: 11/18/2005 1747		Final Weight/Volume: 5.0 mL
Date Prepared: 11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
4-Nitroquinoline-1-oxide	<100		100
N-Nitrosodiethylamine	<50		50
N-Nitrosodimethylamine	<50		50
N-Nitrosodi-n-butylamine	<50		50
N-Nitrosodi-n-propylamine	<50		50
N-Nitrosodiphenylamine	<50		50
n-Nitrosomethylethylamine	<50		50
N-Nitrosomorpholine	<50		50
N-Nitrosopiperidine	<50		50
N-Nitrosopyrrolidine	<50		50
o,o',o"-Triethylphosphorothioate	<50		50
2,2'-oxybis(2-chloropropane)	<50		50
p-Dimethylamino azobenzene	<50		50
Pentachlorobenzene	<50		50
Pentachloronitrobenzene	<50		50
Pentachlorophenol	<250		250
Phenanthrene	<50		50
Phenol	1400		50
2-Picoline	<50		50
p-Phenylene diamine	<10000		10000
Pronamide	<50		50
Pyrene	<50		50
Pyridine	<250		250
Safrole, Total	<50		50
1,2,3,4 -Tetrachlorobenzene	<50		50
1,2,3,5-Tetrachlorobenzene	<50		50
1,2,4,5-Tetrachlorobenzene	<50		50
Tetrachlorophenol	<50		50
2-Toluidine	<50		50
1,2,4-Trichlorobenzene	<50		50
2,4,5-Trichlorophenol	<50		50
2,4,6-Trichlorophenol	<50		50
1,3,5-Trinitrobenzene	<50		50
Surrogate	%Rec		Acceptance Limits
Terphenyl-d14	46		16 - 158
2,4,6-Tribromophenol	70		14 - 93
2-Fluorobiphenyl	32	*	34 - 118
2-Fluorophenol	40		25 - 102
Nitrobenzene-d5	56		39 - 133
Phenol-d5	45		21 - 95

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-6**

Lab Sample ID: 700-7514-3

Date Sampled: 11/15/2005 1020

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 700-14390

Instrument ID: SMA5972

Preparation: 3520C

Prep Batch: 700-14016

Lab File ID: A112216.D

Dilution: 50

Initial Weight/Volume: 1000 mL

Date Analyzed: 11/22/2005 1738

Final Weight/Volume: 5.0 mL

Date Prepared: 11/17/2005 0745

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Benzoic acid	20000		6300

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4

Date Sampled: 11/15/2005 1033

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A111816.D
Dilution:	2.0		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/18/2005 1821		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Acenaphthene	<50		50
Acenaphthylene	<50		50
Acetophenone	<50		50
2-Acetylaminofluorene	<50		50
alpha,alpha-Dimethyl phenethylamine	<10000		10000
4-Aminobiphenyl	<50		50
Aniline	290		100
Anthracene	<50		50
Aramite, Total	<50		50
Benzidine	<400		400
Benzo[a]anthracene	<50		50
Benzo[a]pyrene	<50		50
Benzo[b]fluoranthene	<50		50
Benzo[g,h,i]perylene	<50		50
Benzo[k]fluoranthene	<50		50
Benzyl alcohol	<50		50
Bis(2-chloroethoxy)methane	<50		50
Bis(2-chloroethyl)ether	<50		50
Bis(2-ethylhexyl) phthalate	<50		50
4-Bromophenyl phenyl ether	<50		50
Butyl benzyl phthalate	<50		50
Carbazole	<50		50
4-Chloroaniline	<50		50
4-Chloro-3-methylphenol	<50		50
2-Chloronaphthalene	<50		50
2-Chlorophenol	<50		50
4-Chlorophenyl phenyl ether	<50		50
Chrysene	<50		50
Diallate	<50		50
Diallate	<50		50
Dibenz(a,h)anthracene	<50		50
Dibenzofuran	<50		50
1,2-Dichlorobenzene	<50		50
1,3-Dichlorobenzene	<50		50
1,4-Dichlorobenzene	<50		50
3,3'-Dichlorobenzidine	<100		100
2,4-Dichlorophenol	<50		50
2,6-Dichlorophenol	<50		50
Diethyl phthalate	<50		50
Dimethoate	<50		50
7,12-Dimethylbenz(a)anthracene	<50		50
3,3'-Dimethylbenzidine	<100		100
2,4-Dimethylphenol	<50		50

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4

Date Sampled: 11/15/2005 1033

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A111816.D
Dilution:	2.0		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/18/2005 1821		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Dimethyl phthalate	<50		50
Di-n-butyl phthalate	<50		50
1,3-Dinitrobenzene	<50		50
1,4-Dinitrobenzene	<50		50
4,6-Dinitro-2-methylphenol	<250		250
2,4-Dinitrophenol	<250		250
2,4-Dinitrotoluene	<50		50
2,6-Dinitrotoluene	<50		50
Di-n-octyl phthalate	<50		50
Dinoseb	<50		50
1,4-Dioxane	170		50
Diphenylamine	<50		50
1,2-Diphenylhydrazine	<50		50
Ethyl methanesulfonate	<50		50
Fluoranthene	<50		50
Fluorene	<50		50
Hexachlorobenzene	<50		50
Hexachlorobutadiene	<50		50
Hexachlorocyclopentadiene	<50		50
Hexachloroethane	<50		50
Hexachlorophene	<25000		25000
Hexachloropropene	<50		50
Indeno[1,2,3-cd]pyrene	<50		50
Isophorone	<50		50
Isosafrole	<50		50
Kepone	<50		50
Methapyrilene	<10000		10000
3-Methylcholanthrene	<50		50
Methyl methanesulfonate	<50		50
1-Methylnaphthalene	<50		50
2-Methylnaphthalene	<50		50
2-Methylphenol	<50		50
3 & 4 Methylphenol	<50		50
Naphthalene	<50		50
1,4-Naphthoquinone	<50		50
1-Naphthylamine	<50		50
2-Naphthylamine	<50		50
2-Nitroaniline	<250		250
3-Nitroaniline	<250		250
4-Nitroaniline	<250		250
Nitrobenzene	<50		50
5-Nitro-o-toluidine	<50		50
2-Nitrophenol	<250		250

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4

Date Sampled: 11/15/2005 1033

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation: 3520C	Prep Batch: 700-14016	Lab File ID: A111816.D
Dilution: 2.0		Initial Weight/Volume: 1000 mL
Date Analyzed: 11/18/2005 1821		Final Weight/Volume: 5.0 mL
Date Prepared: 11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
4-Nitrophenol	<250		250
4-Nitroquinoline-1-oxide	<100		100
N-Nitrosodiethylamine	<50		50
N-Nitrosodimethylamine	<50		50
N-Nitrosodi-n-butylamine	<50		50
N-Nitrosodi-n-propylamine	<50		50
N-Nitrosodiphenylamine	<50		50
n-Nitrosomethylethylamine	<50		50
N-Nitrosomorpholine	<50		50
N-Nitrosopiperidine	<50		50
N-Nitrosopyrrolidine	<50		50
o,o',o"-Triethylphosphorothioate	<50		50
2,2'-oxybis(2-chloropropane)	<50		50
p-Dimethylamino azobenzene	<50		50
Pentachlorobenzene	<50		50
Pentachloronitrobenzene	<50		50
Pentachlorophenol	<250		250
Phenanthrene	<50		50
2-Picoline	<50		50
p-Phenylene diamine	<10000		10000
Pronamide	<50		50
Pyrene	<50		50
Pyridine	<250		250
Safrole, Total	<50		50
1,2,3,4 -Tetrachlorobenzene	<50		50
1,2,3,5-Tetrachlorobenzene	<50		50
1,2,4,5-Tetrachlorobenzene	<50		50
Tetrachlorophenol	<50		50
2-Toluidine	<50		50
1,2,4-Trichlorobenzene	<50		50
2,4,5-Trichlorophenol	<50		50
2,4,6-Trichlorophenol	<50		50
1,3,5-Trinitrobenzene	<50		50
Surrogate	%Rec		Acceptance Limits
Terphenyl-d14	57		16 - 158
2,4,6-Tribromophenol	58		14 - 93
2-Fluorobiphenyl	30	*	34 - 118
2-Fluorophenol	49		25 - 102
Nitrobenzene-d5	60		39 - 133
Phenol-d5	47		21 - 95

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4

Date Sampled: 11/15/2005 1033

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A112217.D
Dilution:	25		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/22/2005 1811		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Benzoic acid	14000		3100

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A112217.D
Dilution:	25		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/22/2005 1811		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Phenol	3400		630

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

Client Sample ID: MH-10

Lab Sample ID: 700-7514-5

Date Sampled: 11/15/2005 1045

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A111817.D
Dilution:	2.0		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/18/2005 1854		Final Weight/Volume: 5.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Acenaphthene	<2.6		2.6
Acenaphthylene	<4.8		4.8
Acetophenone	<6.2		6.2
2-Acetylaminofluorene	<3.4		3.4
alpha,alpha-Dimethyl phenethylamine	<8.2		8.2
4-Aminobiphenyl	<3.4		3.4
Anthracene	<2.0		2.0
Aramite, Total	<6.4		6.4
Benzidine	<17		17
Benzo[a]anthracene	<2.0		2.0
Benzo[a]pyrene	<11		11
Benzo[b]fluoranthene	<19		19
Benzo[g,h,i]perylene	<11		11
Benzo[k]fluoranthene	<18		18
Benzyl alcohol	<2.4		2.4
Bis(2-chloroethoxy)methane	<11		11
Bis(2-chloroethyl)ether	<6.0		6.0
Bis(2-ethylhexyl) phthalate	<6.6		6.6
4-Bromophenyl phenyl ether	<3.4		3.4
Butyl benzyl phthalate	<5.6		5.6
Carbazole	<7.6		7.6
4-Chloroaniline	<7.0		7.0
4-Chloro-3-methylphenol	<2.0		2.0
2-Chloronaphthalene	<3.4		3.4
2-Chlorophenol	<2.0		2.0
4-Chlorophenyl phenyl ether	<3.0		3.0
Chrysene	<4.6		4.6
Diallate	<4.4		4.4
Dibenz(a,h)anthracene	<19		19
Dibenzofuran	<2.8		2.8
1,2-Dichlorobenzene	<2.2		2.2
1,3-Dichlorobenzene	<2.2		2.2
1,4-Dichlorobenzene	<2.2		2.2
3,3'-Dichlorobenzidine	<14		14
2,4-Dichlorophenol	<2.4		2.4
2,6-Dichlorophenol	<4.0		4.0
Diethyl phthalate	<3.4		3.4
Dimethoate	<10		10
7,12-Dimethylbenz(a)anthracene	<2.6		2.6
3,3'-Dimethylbenzidine	<17		17
2,4-Dimethylphenol	<2.2		2.2
Dimethyl phthalate	<2.4		2.4
Di-n-butyl phthalate	<2.4		2.4

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-10**

Lab Sample ID: 700-7514-5

Date Sampled: 11/15/2005 1045

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	700-14390	Instrument ID:	SMA5972
Preparation:	3520C	Prep Batch:	700-14016	Lab File ID:	A111817A.D
Dilution:	2.0			Initial Weight/Volume:	1000 mL
Date Analyzed:	11/18/2005 1854			Final Weight/Volume:	5.0 mL
Date Prepared:	11/17/2005 0745			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL
1,3-Dinitrobenzene	<6.6		6.6
1,4-Dinitrobenzene	<6.6		6.6
4,6-Dinitro-2-methylphenol	<4.2		4.2
2,4-Dinitrophenol	<4.6		4.6
2,4-Dinitrotoluene	<4.4		4.4
2,6-Dinitrotoluene	<4.8		4.8
Di-n-octyl phthalate	<3.6		3.6
Dinoseb	<2.8		2.8
1,4-Dioxane	110		2.4
Diphenylamine	<4.4		4.4
1,2-Diphenylhydrazine	<8.0		8.0
Ethyl methanesulfonate	<5.2		5.2
Fluoranthene	<2.0		2.0
Fluorene	<3.0		3.0
Hexachlorobenzene	<3.4		3.4
Hexachlorobutadiene	<2.8		2.8
Hexachlorocyclopentadiene	<3.6		3.6
Hexachloroethane	<2.6		2.6
Hexachlorophene	<80		80
Hexachloropropene	<2.6		2.6
Indeno[1,2,3-cd]pyrene	<5.8		5.8
Isophorone	<2.2		2.2
Isosafrole	<5.0		5.0
Kepone	<8.0		8.0
Methapyrilene	<6.2		6.2
3-Methylcholanthrene	<15		15
Methyl methanesulfonate	<3.6		3.6
1-Methylnaphthalene	<2.2		2.2
2-Methylnaphthalene	<3.2		3.2
2-Methylphenol	<7.6		7.6
3 & 4 Methylphenol	<2.6		2.6
Naphthalene	<2.4		2.4
1,4-Naphthoquinone	<11		11
1-Naphthylamine	<3.0		3.0
2-Naphthylamine	<2.8		2.8
2-Nitroaniline	<13		13
3-Nitroaniline	<4.8		4.8
4-Nitroaniline	<34		34
Nitrobenzene	<2.8		2.8
5-Nitro-o-toluidine	<10		10
2-Nitrophenol	<2.6		2.6
4-Nitrophenol	<7.2		7.2
4-Nitroquinoline-1-oxide	<5.0		5.0

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-10**

Lab Sample ID: 700-7514-5

Date Sampled: 11/15/2005 1045

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation: 3520C	Prep Batch: 700-14016	Lab File ID: A111817A.D
Dilution: 2.0		Initial Weight/Volume: 1000 mL
Date Analyzed: 11/18/2005 1854		Final Weight/Volume: 5.0 mL
Date Prepared: 11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
N-Nitrosodiethylamine	<4.0		4.0
N-Nitrosodimethylamine	<4.4		4.4
N-Nitrosodi-n-butylamine	<20		20
N-Nitrosodi-n-propylamine	<2.0		2.0
N-Nitrosodiphenylamine	<20		20
n-Nitrosomethylethylamine	<4.2		4.2
N-Nitrosomorpholine	<3.8		3.8
N-Nitrosopiperidine	<4.0		4.0
N-Nitrosopyrrolidine	<19		19
o,o',o"-Triethylphosphorothioate	<5.6		5.6
2,2'-oxybis(2-chloropropane)	<2.6		2.6
p-Dimethylamino azobenzene	<4.8		4.8
Pentachlorobenzene	<5.0		5.0
Pentachloronitrobenzene	<5.2		5.2
Pentachlorophenol	<4.2		4.2
Phenanthrene	<2.4		2.4
2-Picoline	<2.8		2.8
p-Phenylene diamine	<3.2		3.2
Pronamide	<5.2		5.2
Pyrene	<4.4		4.4
Pyridine	<9.8		9.8
Safrole, Total	<4.8		4.8
1,2,3,4 -Tetrachlorobenzene	<10		10
1,2,3,5-Tetrachlorobenzene	<3.8		3.8
1,2,4,5-Tetrachlorobenzene	<3.8		3.8
Tetrachlorophenol	<6.4		6.4
2-Toluidine	<11		11
1,2,4-Trichlorobenzene	<2.4		2.4
2,4,5-Trichlorophenol	<3.4		3.4
2,4,6-Trichlorophenol	<4.8		4.8
1,3,5-Trinitrobenzene	<6.2		6.2

Surrogate	%Rec	Acceptance Limits
Terphenyl-d14	42	16 - 158
2,4,6-Tribromophenol	43	14 - 93
2-Fluorobiphenyl	20	34 - 118
2-Fluorophenol	33	25 - 102
Nitrobenzene-d5	46	39 - 133
Phenol-d5	41	21 - 95

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-10**

Lab Sample ID: 700-7514-5

Date Sampled: 11/15/2005 1045

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 700-14456

Instrument ID: Agilent GC/MS 5973

Preparation: 3520C

Prep Batch: 700-14016

Lab File ID: D112104.D

Dilution: 25

Initial Weight/Volume: 1000 mL

Date Analyzed: 11/21/2005 1511

Final Weight/Volume: 5.0 mL

Date Prepared: 11/17/2005 0745

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Aniline	9900		1300
Phenol	2000		630

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-10**

Lab Sample ID: 700-7514-5

Date Sampled: 11/15/2005 1045

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 700-14390

Instrument ID: SMA5972

Preparation: 3520C

Prep Batch: 700-14016

Lab File ID: A112218.D

Dilution: 500

Initial Weight/Volume: 1000 mL

Date Analyzed: 11/22/2005 1845

Final Weight/Volume: 5.0 mL

Date Prepared: 11/17/2005 0745

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Benzoic acid	120000		950

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

Client Sample ID: MH-12

Lab Sample ID: 700-7514-6

Date Sampled: 11/15/2005 1000

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: A111818.D
Dilution:	2.0		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/18/2005 1928		Final Weight/Volume: 1.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Acenaphthene	<10		10
Acenaphthylene	<10		10
Acetophenone	<10		10
2-Acetylaminofluorene	<10		10
alpha,alpha-Dimethyl phenethylamine	<2000		2000
4-Aminobiphenyl	<10		10
Anthracene	<10		10
Aramite, Total	<10		10
Benzidine	<80		80
Benzo[a]anthracene	<10		10
Benzo[a]pyrene	<10		10
Benzo[b]fluoranthene	<10		10
Benzo[g,h,i]perylene	<10		10
Benzo[k]fluoranthene	<10		10
Benzyl alcohol	<10		10
Bis(2-chloroethoxy)methane	<10		10
Bis(2-chloroethyl)ether	<10		10
Bis(2-ethylhexyl) phthalate	<10		10
4-Bromophenyl phenyl ether	<10		10
Butyl benzyl phthalate	<10		10
Carbazole	<10		10
4-Chloroaniline	<10		10
4-Chloro-3-methylphenol	<10		10
2-Chloronaphthalene	<10		10
2-Chlorophenol	<10		10
4-Chlorophenyl phenyl ether	<10		10
Chrysene	<10		10
Diallate	<10		10
Dibenz(a,h)anthracene	<10		10
Dibenzofuran	<10		10
1,2-Dichlorobenzene	<10		10
1,3-Dichlorobenzene	<10		10
1,4-Dichlorobenzene	<10		10
3,3'-Dichlorobenzidine	<20		20
2,4-Dichlorophenol	<10		10
2,6-Dichlorophenol	<10		10
Diethyl phthalate	<10		10
Dimethoate	<10		10
7,12-Dimethylbenz(a)anthracene	<10		10
3,3'-Dimethylbenzidine	<20		20
2,4-Dimethylphenol	<10		10
Dimethyl phthalate	<10		10
Di-n-butyl phthalate	<10		10

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-12**

Lab Sample ID: 700-7514-6

Date Sampled: 11/15/2005 1000

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	700-14390	Instrument ID:	SMA5972
Preparation:	3520C	Prep Batch:	700-14016	Lab File ID:	A111818A.D
Dilution:	2.0			Initial Weight/Volume:	1000 mL
Date Analyzed:	11/18/2005 1928			Final Weight/Volume:	1.0 mL
Date Prepared:	11/17/2005 0745			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL
1,3-Dinitrobenzene	<10		10
1,4-Dinitrobenzene	<10		10
4,6-Dinitro-2-methylphenol	<50		50
2,4-Dinitrophenol	<50		50
2,4-Dinitrotoluene	<10		10
2,6-Dinitrotoluene	<10		10
Di-n-octyl phthalate	<10		10
Dinoseb	<10		10
1,4-Dioxane	34		10
Diphenylamine	<10		10
1,2-Diphenylhydrazine	<10		10
Ethyl methanesulfonate	<10		10
Fluoranthene	<10		10
Fluorene	<10		10
Hexachlorobenzene	<10		10
Hexachlorobutadiene	<10		10
Hexachlorocyclopentadiene	<10		10
Hexachloroethane	<10		10
Hexachlorophene	<5000		5000
Hexachloropropene	<10		10
Indeno[1,2,3-cd]pyrene	<10		10
Isophorone	<10		10
Isosafrole	<10		10
Kepone	<10		10
Methapyrilene	<2000		2000
3-Methylcholanthrene	<10		10
Methyl methanesulfonate	<10		10
1-Methylnaphthalene	<10		10
2-Methylnaphthalene	<10		10
2-Methylphenol	<10		10
3 & 4 Methylphenol	<10		10
Naphthalene	<10		10
1,4-Naphthoquinone	<10		10
1-Naphthylamine	<10		10
2-Naphthylamine	<10		10
2-Nitroaniline	<50		50
3-Nitroaniline	<50		50
4-Nitroaniline	<50		50
Nitrobenzene	<10		10
5-Nitro-o-toluidine	<10		10
2-Nitrophenol	<50		50
4-Nitrophenol	<50		50
4-Nitroquinoline-1-oxide	<20		20

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-12**

Lab Sample ID: 700-7514-6

Date Sampled: 11/15/2005 1000

Client Matrix: Water

Date Received: 11/15/2005 1347

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 700-14390	Instrument ID: SMA5972
Preparation: 3520C	Prep Batch: 700-14016	Lab File ID: A111818A.D
Dilution: 2.0		Initial Weight/Volume: 1000 mL
Date Analyzed: 11/18/2005 1928		Final Weight/Volume: 1.0 mL
Date Prepared: 11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
N-Nitrosodiethylamine	<10		10
N-Nitrosodimethylamine	<10		10
N-Nitrosodi-n-butylamine	<10		10
N-Nitrosodi-n-propylamine	<10		10
N-Nitrosodiphenylamine	<10		10
n-Nitrosomethylethylamine	<10		10
N-Nitrosomorpholine	<10		10
N-Nitrosopiperidine	<10		10
N-Nitrosopyrrolidine	<10		10
o,o',o"-Triethylphosphorothioate	<10		10
2,2'-oxybis(2-chloropropane)	<10		10
p-Dimethylamino azobenzene	<10		10
Pentachlorobenzene	<10		10
Pentachloronitrobenzene	<10		10
Pentachlorophenol	<50		50
Phenanthrene	<10		10
2-Picoline	<10		10
p-Phenylene diamine	<2000		2000
Pronamide	<10		10
Pyrene	<10		10
Pyridine	<50		50
Safrole, Total	<10		10
1,2,3,4 -Tetrachlorobenzene	<10		10
1,2,3,5-Tetrachlorobenzene	<10		10
1,2,4,5-Tetrachlorobenzene	<10		10
Tetrachlorophenol	<10		10
2-Toluidine	<10		10
1,2,4-Trichlorobenzene	<10		10
2,4,5-Trichlorophenol	<10		10
2,4,6-Trichlorophenol	<10		10
1,3,5-Trinitrobenzene	<10		10

Surrogate	%Rec	Acceptance Limits
Terphenyl-d14	37	16 - 158
2,4,6-Tribromophenol	36	14 - 93
2-Fluorobiphenyl	15	34 - 118
2-Fluorophenol	39	25 - 102
Nitrobenzene-d5	40	39 - 133
Phenol-d5	38	21 - 95

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-12**

Lab Sample ID: 700-7514-6

Date Sampled: 11/15/2005 1000

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 700-14456	Instrument ID: Agilent GC/MS 5973
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: D112105.D
Dilution:	150		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/21/2005 1544		Final Weight/Volume: 1.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Benzoic acid	27000		57

Method:	8270C	Analysis Batch: 700-14456	Instrument ID: Agilent GC/MS 5973
Preparation:	3520C	Prep Batch: 700-14016	Lab File ID: D112105.D
Dilution:	150		Initial Weight/Volume: 1000 mL
Date Analyzed:	11/21/2005 1544		Final Weight/Volume: 1.0 mL
Date Prepared:	11/17/2005 0745		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL
Aniline	16000		170
Phenol	590		33

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-1**

Lab Sample ID: 700-7514-1

Date Sampled: 11/15/2005 0950

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8015B Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

Method: 8015B

Analysis Batch: 700-14092

Instrument ID: VGB

Preparation: N/A

Lab File ID: B111721.D

Dilution: 10

Initial Weight/Volume:

Date Analyzed: 11/17/2005 2209

Final Weight/Volume: 1 mL

Date Prepared: N/A

Injection Volume:

Column ID: PRIMARY

Analyte	Result (mg/L)	Qualifier	RL
2-Chloroethanol	<10		10

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-1**

Lab Sample ID: 700-7514-1

Client Matrix: Water

Date Sampled: 11/15/2005 0950

Date Received: 11/15/2005 1347

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### 8015B Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

**Client Sample ID: MH-3**

Lab Sample ID: 700-7514-2

Client Matrix: Water

Date Sampled: 11/15/2005 1005

Date Received: 11/15/2005 1347

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### 8015B Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

Method: 8015B

Analysis Batch: 700-14092

Instrument ID: VGB

Preparation: N/A

Lab File ID: B111722.D

Dilution: 10

Initial Weight/Volume:

Date Analyzed: 11/17/2005 2228

Final Weight/Volume: 1 mL

Date Prepared: N/A

Injection Volume:

Column ID: PRIMARY

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Analyte	Result (mg/L)	Qualifier	RL
2-Chloroethanol	<10		10

---

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-6**

Lab Sample ID: 700-7514-3

Date Sampled: 11/15/2005 1020

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8015B Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

Method: 8015B

Analysis Batch: 700-14092

Instrument ID: VGB

Preparation: N/A

Lab File ID: B111723.D

Dilution: 10

Initial Weight/Volume:

Date Analyzed: 11/17/2005 2246

Final Weight/Volume: 1 mL

Date Prepared: N/A

Injection Volume:

Column ID: PRIMARY

Analyte	Result (mg/L)	Qualifier	RL
2-Chloroethanol	<10		10

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4

Date Sampled: 11/15/2005 1033

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8015B Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

Method: 8015B

Analysis Batch: 700-14092

Instrument ID: VGB

Preparation: N/A

Lab File ID: B111724.D

Dilution: 10

Initial Weight/Volume:

Date Analyzed: 11/17/2005 2305

Final Weight/Volume: 1 mL

Date Prepared: N/A

Injection Volume:

Column ID: PRIMARY

Analyte	Result (mg/L)	Qualifier	RL
2-Chloroethanol	<10		10

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-10**

Lab Sample ID: 700-7514-5

Date Sampled: 11/15/2005 1045

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8015B Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

Method: 8015B

Analysis Batch: 700-14092

Instrument ID: VGB

Preparation: N/A

Lab File ID: B111725.D

Dilution: 10

Initial Weight/Volume:

Date Analyzed: 11/17/2005 2324

Final Weight/Volume: 1 mL

Date Prepared: N/A

Injection Volume:

Column ID: PRIMARY

Analyte	Result (mg/L)	Qualifier	RL
2-Chloroethanol	<10		10

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Client Sample ID: MH-12**

Lab Sample ID: 700-7514-6

Date Sampled: 11/15/2005 1000

Client Matrix: Water

Date Received: 11/15/2005 1347

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### 8015B Nonhalogenated Organic using GC/FID (Direct Aqueous Injection)

Method: 8015B

Analysis Batch: 700-14092

Instrument ID: VGB

Preparation: N/A

Lab File ID: B111726.D

Dilution: 10

Initial Weight/Volume:

Date Analyzed: 11/17/2005 2342

Final Weight/Volume: 1 mL

Date Prepared: N/A

Injection Volume:

Column ID: PRIMARY

Analyte	Result (mg/L)	Qualifier	RL
2-Chloroethanol	<10		10

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

### Client Sample ID: MH-1

Lab Sample ID: 700-7514-1  
Client Matrix: Water

Date Sampled: 11/15/2005 0950  
Date Received: 11/15/2005 1347

### 6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-Total Recoverable

Method:	6010B	Analysis Batch: 700-14178	Instrument ID:	TJA ICP TRACE
Preparation:	3005A	Prep Batch: 700-13977	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50.0 mL
Date Analyzed:	11/21/2005 1527		Final Weight/Volume:	50.0 mL
Date Prepared:	11/16/2005 1020			

Analyte	Result (mg/L)	Qualifier	RL
Antimony	0.021		0.020
Arsenic	0.038		0.010
Barium	0.028		0.010
Beryllium	<0.0040		0.0040
Cadmium	0.015		0.0050
Chromium	0.012		0.010
Cobalt	0.038		0.010
Copper	<0.020		0.020
Lead	<0.0050		0.0050
Nickel	0.21		0.040
Selenium	0.026		0.010
Silver	<0.010		0.010
Thallium	<0.010		0.010
Tin	0.13		0.010
Vanadium	0.11		0.010
Zinc	4.5		0.020

### 7470A Mercury in Liquid Waste (Manual Cold Vapor Technique)

Method:	7470A	Analysis Batch: 700-14044	Instrument ID:	LEEMAN PS200
Preparation:	7470A	Prep Batch: 700-13991	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	11/17/2005 1126		Final Weight/Volume:	40 mL
Date Prepared:	11/16/2005 1412			

Analyte	Result (mg/L)	Qualifier	RL
Mercury	0.0010		0.00020

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

### Client Sample ID: MH-3

Lab Sample ID: 700-7514-2  
Client Matrix: Water

Date Sampled: 11/15/2005 1005  
Date Received: 11/15/2005 1347

#### 6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-Total Recoverable

Method:	6010B	Analysis Batch: 700-14178	Instrument ID:	TJA ICP TRACE
Preparation:	3005A	Prep Batch: 700-13977	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50.0 mL
Date Analyzed:	11/21/2005 1527		Final Weight/Volume:	50.0 mL
Date Prepared:	11/16/2005 1020			

Analyte	Result (mg/L)	Qualifier	RL
Antimony	0.050		0.020
Arsenic	0.077		0.010
Barium	0.024		0.010
Beryllium	<0.0040		0.0040
Cadmium	0.020		0.0050
Chromium	0.023		0.010
Cobalt	0.042		0.010
Copper	<0.020		0.020
Lead	<0.0050		0.0050
Nickel	0.40		0.040
Selenium	0.026		0.010
Silver	<0.010		0.010
Thallium	<0.010		0.010
Tin	0.18		0.010
Vanadium	0.19		0.010
Zinc	6.8		0.020

#### 7470A Mercury in Liquid Waste (Manual Cold Vapor Technique)

Method:	7470A	Analysis Batch: 700-14044	Instrument ID:	LEEMAN PS200
Preparation:	7470A	Prep Batch: 700-13991	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	11/17/2005 1131		Final Weight/Volume:	40 mL
Date Prepared:	11/16/2005 1412			

Analyte	Result (mg/L)	Qualifier	RL
Mercury	0.0011		0.00020

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

### Client Sample ID: MH-6

Lab Sample ID: 700-7514-3  
Client Matrix: Water

Date Sampled: 11/15/2005 1020  
Date Received: 11/15/2005 1347

### 6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-Total Recoverable

Method:	6010B	Analysis Batch: 700-14178	Instrument ID:	TJA ICP TRACE
Preparation:	3005A	Prep Batch: 700-13977	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50.0 mL
Date Analyzed:	11/21/2005 1527		Final Weight/Volume:	50.0 mL
Date Prepared:	11/16/2005 1020			

Analyte	Result (mg/L)	Qualifier	RL
Antimony	0.32		0.020
Arsenic	0.085		0.010
Barium	0.57		0.010
Beryllium	<0.0040		0.0040
Cadmium	<0.0050		0.0050
Chromium	0.051		0.010
Cobalt	<0.010		0.010
Copper	<0.020		0.020
Lead	<0.0050		0.0050
Nickel	0.070		0.040
Selenium	0.039		0.010
Silver	<0.010		0.010
Thallium	<0.010		0.010
Tin	0.18		0.010
Vanadium	<0.010		0.010
Zinc	0.24		0.020

### 7470A Mercury in Liquid Waste (Manual Cold Vapor Technique)

Method:	7470A	Analysis Batch: 700-14044	Instrument ID:	LEEMAN PS200
Preparation:	7470A	Prep Batch: 700-13991	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	11/17/2005 1132		Final Weight/Volume:	40 mL
Date Prepared:	11/16/2005 1412			

Analyte	Result (mg/L)	Qualifier	RL
Mercury	<0.00020		0.00020

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Client Sample ID: MH-8**

Lab Sample ID: 700-7514-4  
Client Matrix: Water

Date Sampled: 11/15/2005 1033  
Date Received: 11/15/2005 1347

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### 6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-Total Recoverable

Method:	6010B	Analysis Batch: 700-14178	Instrument ID:	TJA ICP TRACE
Preparation:	3005A	Prep Batch: 700-13977	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50.0 mL
Date Analyzed:	11/21/2005 1527		Final Weight/Volume:	50.0 mL
Date Prepared:	11/16/2005 1020			

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Analyte	Result (mg/L)	Qualifier	RL
Antimony	0.22		0.020
Arsenic	0.090		0.010
Barium	0.36		0.010
Beryllium	<0.0040		0.0040
Cadmium	<0.0050		0.0050
Chromium	0.011		0.010
Cobalt	0.012		0.010
Copper	<0.020		0.020
Lead	<0.0050		0.0050
Nickel	0.17		0.040
Selenium	0.024		0.010
Silver	<0.010		0.010
Thallium	<0.010		0.010
Tin	0.25		0.010
Vanadium	0.011		0.010
Zinc	0.19		0.020

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### 7470A Mercury in Liquid Waste (Manual Cold Vapor Technique)

Method:	7470A	Analysis Batch: 700-14044	Instrument ID:	LEEMAN PS200
Preparation:	7470A	Prep Batch: 700-13991	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	11/17/2005 1134		Final Weight/Volume:	40 mL
Date Prepared:	11/16/2005 1412			

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Analyte	Result (mg/L)	Qualifier	RL
Mercury	<0.00020		0.00020

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## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

### Client Sample ID: MH-10

Lab Sample ID: 700-7514-5  
Client Matrix: Water

Date Sampled: 11/15/2005 1045  
Date Received: 11/15/2005 1347

### 6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-Total Recoverable

Method:	6010B	Analysis Batch: 700-14178	Instrument ID:	TJA ICP TRACE
Preparation:	3005A	Prep Batch: 700-13977	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50.0 mL
Date Analyzed:	11/21/2005 1527		Final Weight/Volume:	50.0 mL
Date Prepared:	11/16/2005 1020			

Analyte	Result (mg/L)	Qualifier	RL
Antimony	8.8		0.020
Arsenic	0.66		0.010
Barium	0.070		0.010
Beryllium	<0.0040		0.0040
Cadmium	<0.0050		0.0050
Chromium	0.087		0.010
Cobalt	0.020		0.010
Copper	<0.020		0.020
Lead	<0.0050		0.0050
Nickel	0.22		0.040
Selenium	0.040		0.010
Silver	<0.010		0.010
Thallium	<0.010		0.010
Tin	2.2		0.010
Vanadium	0.032		0.010
Zinc	0.64		0.020

### 7470A Mercury in Liquid Waste (Manual Cold Vapor Technique)

Method:	7470A	Analysis Batch: 700-14044	Instrument ID:	LEEMAN PS200
Preparation:	7470A	Prep Batch: 700-13991	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	11/17/2005 1135		Final Weight/Volume:	40 mL
Date Prepared:	11/16/2005 1412			

Analyte	Result (mg/L)	Qualifier	RL
Mercury	<0.00020		0.00020

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

### Client Sample ID: MH-12

Lab Sample ID: 700-7514-6  
Client Matrix: Water

Date Sampled: 11/15/2005 1000  
Date Received: 11/15/2005 1347

#### 6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-Total Recoverable

Method:	6010B	Analysis Batch: 700-14178	Instrument ID:	TJA ICP TRACE
Preparation:	3005A	Prep Batch: 700-13977	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	50.0 mL
Date Analyzed:	11/21/2005 1527		Final Weight/Volume:	50.0 mL
Date Prepared:	11/16/2005 1020			

Analyte	Result (mg/L)	Qualifier	RL
Antimony	1.6		0.020
Arsenic	0.13		0.010
Barium	0.20		0.010
Beryllium	<0.0040		0.0040
Cadmium	<0.0050		0.0050
Chromium	0.012		0.010
Cobalt	<0.010		0.010
Copper	<0.020		0.020
Lead	<0.0050		0.0050
Nickel	0.081		0.040
Selenium	0.013		0.010
Silver	<0.010		0.010
Thallium	<0.010		0.010
Tin	0.82		0.010
Vanadium	0.013		0.010
Zinc	0.10		0.020

#### 7470A Mercury in Liquid Waste (Manual Cold Vapor Technique)

Method:	7470A	Analysis Batch: 700-14044	Instrument ID:	LEEMAN PS200
Preparation:	7470A	Prep Batch: 700-13991	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	11/17/2005 1137		Final Weight/Volume:	40 mL
Date Prepared:	11/16/2005 1412			

Analyte	Result (mg/L)	Qualifier	RL
Mercury	<0.00020		0.00020

## DATA REPORTING QUALIFIERS

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
GC/MS Semi VOA	*	LCS, LCSD, MS, MSD, MD, or Surrogate exceeds the control limits

# **QUALITY CONTROL RESULTS**

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Method Blank - Batch: 700-14065**

**Method: 8260B**  
**Preparation: 5030B**

Lab Sample ID: MB 700-14065/3  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 0953  
Date Prepared: 11/17/2005 0953

Analysis Batch: 700-14065  
Prep Batch: N/A  
Units: ug/L

Instrument ID: VMF5973  
Lab File ID: F111705.D  
Initial Weight/Volume: 5 mL  
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	<1.0		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
2-Chloroethyl vinyl ether	<10		10
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<2.0		2.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<1.0		1.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl Ethyl Ketone	<10		10
methyl isobutyl ketone	<10		10
Methyl methacrylate	<1.0		1.0
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Method Blank - Batch: 700-14065**

**Method: 8260B**  
**Preparation: 5030B**

Lab Sample ID: MB 700-14065/3  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 0953  
Date Prepared: 11/17/2005 0953

Analysis Batch: 700-14065  
Prep Batch: N/A  
Units: ug/L

Instrument ID: VMF5973  
Lab File ID: F111705.D  
Initial Weight/Volume: 5 mL  
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
trans-1,4-Dichloro-2-butene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0
Surrogate	% Rec	Acceptance Limits	
4-Bromofluorobenzene	103	70 - 118	
Dibromofluoromethane	98	66 - 125	
Toluene-d8	102	77 - 116	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Laboratory Control/  
Laboratory Control Duplicate Recovery Report - Batch: 700-14065**

**Method: 8260B  
Preparation: 5030B**

LCS Lab Sample ID: LCS 700-14065/1  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 0855  
Date Prepared: 11/17/2005 0855

Analysis Batch: 700-14065  
Prep Batch: N/A  
Units: ug/L

Instrument ID: VMF5973  
Lab File ID: F111703.D  
Initial Weight/Volume: 5 mL  
Final Weight/Volume: 5 mL

LCSD Lab Sample ID: LCSD 700-14065/2  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 0924  
Date Prepared: 11/17/2005 0924

Analysis Batch: 700-14065  
Prep Batch: N/A  
Units: ug/L

Instrument ID: VMF5973  
Lab File ID: F111704.D  
Initial Weight/Volume: 5 mL  
Final Weight/Volume: 5 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Benzene	96	93	68 - 135	2	37		
Chlorobenzene	90	90	71 - 132	1	22		
1,1-Dichloroethene	99	97	56 - 146	1	30		
Toluene	92	90	70 - 133	2	33		
Trichloroethene	86	86	67 - 132	0	35		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
4-Bromofluorobenzene	108		107		70 - 118		
Dibromofluoromethane	101		105		66 - 125		
Toluene-d8	103		103		77 - 116		

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

### Method Blank - Batch: 700-14016

Method: 8270C

Preparation: 3520C

Lab Sample ID: MB 700-14016/1-A

Analysis Batch: 700-14390

Instrument ID: SMA5972

Client Matrix: Water

Prep Batch: 700-14016

Lab File ID: A111810.D

Dilution: 2.0

Units: ug/L

Initial Weight/Volume: 1000 mL

Date Analyzed: 11/18/2005 1458

Final Weight/Volume: 1.0 mL

Date Prepared: 11/17/2005 0745

Injection Volume:

Analyte	Result	Qual	MDL
Acenaphthene	<10		10
Acenaphthylene	<10		10
Acetophenone	<10		10
2-Acetylaminofluorene	<10		10
alpha,alpha-Dimethyl phenethylamine	<2000		2000
4-Aminobiphenyl	<10		10
Aniline	<20		20
Anthracene	<10		10
Aramite, Total	<10		10
Benzidine	<80		80
Benzo[a]anthracene	<10		10
Benzo[a]pyrene	<10		10
Benzo[b]fluoranthene	<10		10
Benzo[g,h,i]perylene	<10		10
Benzoic acid	<50		50
Benzo[k]fluoranthene	<10		10
Benzyl alcohol	<10		10
Bis(2-chloroethoxy)methane	<10		10
Bis(2-chloroethyl)ether	<10		10
Bis(2-ethylhexyl) phthalate	<10		10
4-Bromophenyl phenyl ether	<10		10
Butyl benzyl phthalate	<10		10
Carbazole	<10		10
4-Chloroaniline	<10		10
4-Chloro-3-methylphenol	<10		10
2-Chloronaphthalene	<10		10
2-Chlorophenol	<10		10
4-Chlorophenyl phenyl ether	<10		10
Chrysene	<10		10
Diallate	<10		10
Dibenz(a,h)anthracene	<10		10
Dibenzofuran	<10		10
1,2-Dichlorobenzene	<10		10
1,3-Dichlorobenzene	<10		10
1,4-Dichlorobenzene	<10		10
3,3'-Dichlorobenzidine	<20		20
2,4-Dichlorophenol	<10		10
2,6-Dichlorophenol	<10		10
Diethyl phthalate	<10		10
Dimethoate	<10		10
7,12-Dimethylbenz(a)anthracene	<10		10

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Method Blank - Batch: 700-14016**

**Method: 8270C**  
**Preparation: 3520C**

Lab Sample ID: MB 700-14016/1-A  
Client Matrix: Water  
Dilution: 2.0  
Date Analyzed: 11/18/2005 1458  
Date Prepared: 11/17/2005 0745

Analysis Batch: 700-14390  
Prep Batch: 700-14016  
Units: ug/L

Instrument ID: SMA5972  
Lab File ID: A111810.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Analyte	Result	Qual	MDL
3,3'-Dimethylbenzidine	<20		20
2,4-Dimethylphenol	<10		10
Dimethyl phthalate	<10		10
Di-n-butyl phthalate	<10		10
1,3-Dinitrobenzene	<10		10
1,4-Dinitrobenzene	<10		10
4,6-Dinitro-2-methylphenol	<50		50
2,4-Dinitrophenol	<50		50
2,4-Dinitrotoluene	<10		10
2,6-Dinitrotoluene	<10		10
Di-n-octyl phthalate	<10		10
Dinoseb	<10		10
1,4-Dioxane	<10		10
Diphenylamine	<10		10
1,2-Diphenylhydrazine	<10		10
Ethyl methanesulfonate	<10		10
Fluoranthene	<10		10
Fluorene	<10		10
Hexachlorobenzene	<10		10
Hexachlorobutadiene	<10		10
Hexachlorocyclopentadiene	<10		10
Hexachloroethane	<10		10
Hexachlorophene	<5000		5000
Hexachloropropene	<10		10
Indeno[1,2,3-cd]pyrene	<10		10
Isophorone	<10		10
Isosafrole	<10		10
Kepone	<10		10
Methapyrilene	<2000		2000
3-Methylcholanthrene	<10		10
Methyl methanesulfonate	<10		10
1-Methylnaphthalene	<10		10
2-Methylnaphthalene	<10		10
2-Methylphenol	<10		10
3 & 4 Methylphenol	<10		10
Naphthalene	<10		10
1,4-Naphthoquinone	<10		10
1-Naphthylamine	<10		10
2-Naphthylamine	<10		10
2-Nitroaniline	<50		50
3-Nitroaniline	<50		50

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Method Blank - Batch: 700-14016**

**Method: 8270C**  
**Preparation: 3520C**

Lab Sample ID: MB 700-14016/1-A  
Client Matrix: Water  
Dilution: 2.0  
Date Analyzed: 11/18/2005 1458  
Date Prepared: 11/17/2005 0745

Analysis Batch: 700-14390  
Prep Batch: 700-14016  
Units: ug/L

Instrument ID: SMA5972  
Lab File ID: A111810.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Analyte	Result	Qual	MDL
4-Nitroaniline	<50		50
Nitrobenzene	<10		10
5-Nitro-o-toluidine	<10		10
2-Nitrophenol	<50		50
4-Nitrophenol	<50		50
4-Nitroquinoline-1-oxide	<20		20
N-Nitrosodiethylamine	<10		10
N-Nitrosodimethylamine	<10		10
N-Nitrosodi-n-butylamine	<10		10
N-Nitrosodi-n-propylamine	<10		10
N-Nitrosodiphenylamine	<10		10
n-Nitrosomethylethylamine	<10		10
N-Nitrosomorpholine	<10		10
N-Nitrosopiperidine	<10		10
N-Nitrosopyrrolidine	<10		10
o,o',o"-Triethylphosphorothioate	<10		10
2,2'-oxybis(2-chloropropane)	<10		10
p-Dimethylamino azobenzene	<10		10
Pentachlorobenzene	<10		10
Pentachloronitrobenzene	<10		10
Pentachlorophenol	<50		50
Phenanthrene	<10		10
Phenol	<10		10
2-Picoline	<10		10
p-Phenylene diamine	<2000		2000
Pronamide	<10		10
Pyrene	<10		10
Pyridine	<50		50
Safrole, Total	<10		10
1,2,3,4 -Tetrachlorobenzene	<10		10
1,2,3,5-Tetrachlorobenzene	<10		10
1,2,4,5-Tetrachlorobenzene	<10		10
Tetrachlorophenol	<10		10
2-Toluidine	<10		10
1,2,4-Trichlorobenzene	<10		10
2,4,5-Trichlorophenol	<10		10
2,4,6-Trichlorophenol	<10		10
1,3,5-Trinitrobenzene	<10		10

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14	99	16 - 158

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

### Method Blank - Batch: 700-14016

**Method: 8270C**  
**Preparation: 3520C**

Lab Sample ID: MB 700-14016/1-A  
Client Matrix: Water  
Dilution: 2.0  
Date Analyzed: 11/18/2005 1458  
Date Prepared: 11/17/2005 0745

Analysis Batch: 700-14390  
Prep Batch: 700-14016  
Units: ug/L

Instrument ID: SMA5972  
Lab File ID: A111810.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Surrogate	% Rec	Acceptance Limits
2,4,6-Tribromophenol	59	14 - 93
2-Fluorobiphenyl	82	34 - 118
2-Fluorophenol	46	25 - 102
Nitrobenzene-d5	71	39 - 133
Phenol-d5	35	21 - 95

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Laboratory Control/  
Laboratory Control Duplicate Recovery Report - Batch: 700-14016**

**Method: 8270C  
Preparation: 3520C**

LCS Lab Sample ID: LCS 700-14016/2-A  
Client Matrix: Water  
Dilution: 2.0  
Date Analyzed: 11/18/2005 1532  
Date Prepared: 11/17/2005 0745

Analysis Batch: 700-14390  
Prep Batch: 700-14016  
Units: ug/L

Instrument ID: SMA5972  
Lab File ID: A111811.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

LCSD Lab Sample ID: LCSD 700-14016/3-A  
Client Matrix: Water  
Dilution: 2.0  
Date Analyzed: 11/18/2005 1605  
Date Prepared: 11/17/2005 0745

Analysis Batch: 700-14390  
Prep Batch: 700-14016  
Units: ug/L

Instrument ID: SMA5972  
Lab File ID: A111812.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Acenaphthene	78	91	34 - 134	15	35		
4-Chloro-3-methylphenol	51	62	48 - 128	19	31		
2-Chlorophenol	57	65	45 - 116	12	34		
1,4-Dichlorobenzene	69	75	30 - 95	9	31		
2,4-Dinitrotoluene	62	70	36 - 129	11	32		
4-Nitrophenol	27	26	20 - 144	6	44		
N-Nitrosodi-n-propylamine	74	90	38 - 125	19	30		
Pentachlorophenol	35	43	34 - 133	20	33		
Phenol	42	45	32 - 122	7	36		
Pyrene	99	107	32 - 122	7	42		
1,2,4-Trichlorobenzene	73	82	34 - 103	12	28		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
Terphenyl-d14	104		99		16 - 158		
2,4,6-Tribromophenol	86		82		14 - 93		
2-Fluorobiphenyl	85		80		34 - 118		
2-Fluorophenol	53		55		25 - 102		
Nitrobenzene-d5	70		83		39 - 133		
Phenol-d5	45		46		21 - 95		

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Method Blank - Batch: 700-14092**

**Method: 8015B**  
**Preparation: N/A**

Lab Sample ID: MB 700-14092/3  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 2150  
Date Prepared: N/A

Analysis Batch: 700-14092  
Prep Batch: N/A  
Units: mg/L

Instrument ID: VGB  
Lab File ID: B111720.D  
Initial Weight/Volume:  
Final Weight/Volume: 1 mL  
Injection Volume:  
Column ID: PRIMARY

Analyte	Result	Qual	RL
2-Chloroethanol	<1.0		1.0

**Laboratory Control/  
Laboratory Control Duplicate Recovery Report - Batch: 700-14092**

**Method: 8015B**  
**Preparation: N/A**

LCS Lab Sample ID: LCS 700-14092/1  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 2113  
Date Prepared: N/A

Analysis Batch: 700-14092  
Prep Batch: N/A  
Units: mg/L

Instrument ID: VGB  
Lab File ID: B111718.D  
Initial Weight/Volume:  
Final Weight/Volume: 1 mL  
Injection Volume:  
Column ID: PRIMARY

LCSD Lab Sample ID: LCSD 700-14092/2  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 2132  
Date Prepared: N/A

Analysis Batch: 700-14092  
Prep Batch: N/A  
Units: mg/L

Instrument ID: VGB  
Lab File ID: B111719.D  
Initial Weight/Volume:  
Final Weight/Volume: 1 mL  
Injection Volume:  
Column ID: PRIMARY

Analyte	<u>% Rec.</u>		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
2-Chloroethanol	100	96	70 - 130	4	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 700-14092**

**Method: 8015B  
Preparation: N/A**

MS Lab Sample ID: 700-7514-3  
Client Matrix: Water  
Dilution: 10  
Date Analyzed: 11/18/2005 0001  
Date Prepared: N/A

Analysis Batch: 700-14092  
Prep Batch: N/A

Instrument ID: VGB  
Lab File ID: B111727.D  
Initial Weight/Volume:  
Final Weight/Volume: 1 mL  
Injection Volume:  
Column ID: PRIMARY

MSD Lab Sample ID: 700-7514-3  
Client Matrix: Water  
Dilution: 10  
Date Analyzed: 11/18/2005 0020  
Date Prepared: N/A

Analysis Batch: 700-14092  
Prep Batch: N/A

Instrument ID: VGB  
Lab File ID: B111728.D  
Initial Weight/Volume:  
Final Weight/Volume: 1 mL  
Injection Volume:  
Column ID: PRIMARY

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
2-Chloroethanol	79	86	70 - 130	8	30		

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

### Matrix Spike - Batch: 700-13977

**Method: 6010B**  
**Preparation: 3005A**  
**Total Recoverable**

Lab Sample ID: 700-7514-6  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/21/2005 1527  
Date Prepared: 11/16/2005 1020

Analysis Batch: 700-14178  
Prep Batch: 700-13977  
Units: mg/L

Instrument ID: TJA ICP TRACE  
Lab File ID: N/A  
Initial Weight/Volume: 50.0 mL  
Final Weight/Volume: 50.0 mL

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	1.6	1.00	2.7	112	75 - 125	
Arsenic	0.13	1.00	1.2	111	75 - 125	
Barium	0.20	1.00	1.2	100	75 - 125	
Beryllium	<0.0040	1.00	1.1	108	75 - 125	
Cadmium	<0.0050	1.00	1.0	105	75 - 125	
Chromium	0.012	1.00	1.1	106	75 - 125	
Cobalt	<0.010	1.00	1.1	109	75 - 125	
Copper	<0.020	1.00	1.1	111	75 - 125	
Lead	<0.0050	1.00	1.1	107	75 - 125	
Nickel	0.081	1.00	1.1	105	75 - 125	
Selenium	0.013	1.00	0.79	78	75 - 125	
Silver	<0.010	1.00	1.2	123	75 - 125	
Thallium	<0.010	1.00	1.1	107	75 - 125	
Tin	0.82	1.00	1.9	109	75 - 125	
Vanadium	0.013	1.00	1.1	105	75 - 125	
Zinc	0.10	1.00	1.2	108	75 - 125	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-7514-1  
Sdg Number: ROHM68

**Method Blank - Batch: 700-13991**

**Method: 7470A**  
**Preparation: 7470A**

Lab Sample ID: MB 700-13991/1-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 1117  
Date Prepared: 11/16/2005 1412

Analysis Batch: 700-14044  
Prep Batch: 700-13991  
Units: mg/L

Instrument ID: LEEMAN PS200  
Lab File ID: N/A  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	Result	Qual	RL
Mercury	<0.00020		0.00020

**Laboratory Control/  
Laboratory Control Duplicate Recovery Report - Batch: 700-13991**

**Method: 7470A**  
**Preparation: 7470A**

LCS Lab Sample ID: LCS 700-13991/2-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 1118  
Date Prepared: 11/16/2005 1412

Analysis Batch: 700-14044  
Prep Batch: 700-13991  
Units: mg/L

Instrument ID: LEEMAN PS200  
Lab File ID: N/A  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

LCSD Lab Sample ID: LCSD 700-13991/3-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 11/17/2005 1120  
Date Prepared: 11/16/2005 1412

Analysis Batch: 700-14044  
Prep Batch: 700-13991  
Units: mg/L

Instrument ID: LEEMAN PS200  
Lab File ID: N/A  
Initial Weight/Volume: 40 mL  
Final Weight/Volume: 40 mL

Analyte	<u>% Rec.</u>		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Mercury	105	105	80 - 120	0	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LOGIN SAMPLE RECEIPT CHECK LIST

Client: Rohm and Haas Company

Job Number: 700-7514-1

Sdg Number: ROHM68

**Login Number: 7514**

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present	True	
Samples do not require splitting or compositing	True	

# ANALYTICAL REPORT

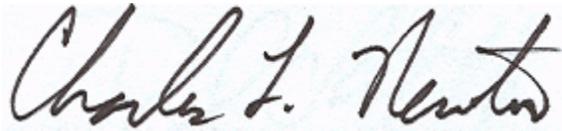
Job Number: 700-8097-1

Job Description: Rohm & Haas - Moss Point

For:

Rohm and Haas Company  
1900 Tidal Road  
Deer Park, TX 77536

Attention: Mr. Rick Wenzel

A handwritten signature in black ink that reads "Charles L. Newton". The signature is written in a cursive style and is positioned above a horizontal line.

---

Charles Newton  
Project Manager I  
cnewton@stl-inc.com  
12/12/2005

## METHOD SUMMARY

Client: Rohm and Haas Company

Job Number: 700-8097-1

Description	Lab Location	Method	Preparation Method
<b>Matrix:</b> Water			
Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	STL-MOB	SW846 8270C	
Continuous Liquid-Liquid Extraction	STL-MOB		SW846 3520C

### LAB REFERENCES:

STL-MOB = STL-Mobile

### METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Rohm and Haas Company

Job Number: 700-8097-1

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 8270C	Huynh, HoangNam	HH
SW846 8270C	Nguyen, LanHuong	LN

## SAMPLE SUMMARY

Client: Rohm and Haas Company

Job Number: 700-8097-1

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
700-8097-1	MH-6	Water	12/07/2005 1125	12/07/2005 1302

# **SAMPLE RESULTS**

# Analytical Data

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Client Sample ID: MH-6**

Lab Sample ID: 700-8097-1  
Client Matrix: Water

Date Sampled: 12/07/2005 1125  
Date Received: 12/07/2005 1302

## 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C                      Analysis Batch: 700-14978                      Instrument ID: SMC5973  
Preparation: 3520C                      Prep Batch: 700-14821                      Lab File ID: C120916.D  
Dilution: 1.0                      Initial Weight/Volume: 100 mL  
Date Analyzed: 12/09/2005 2001                      Final Weight/Volume: 1.0 mL  
Date Prepared: 12/08/2005 0752                      Injection Volume:

Analyte	Result (ug/L)	Qualifier	RL
1,2,4-Trichlorobenzene	<20		20
1,2-Dichlorobenzene	<20		20
1,2-Diphenylhydrazine	<20		20
1,3-Dichlorobenzene	<20		20
1,4-Dichlorobenzene	<20		20
1,4-Dioxane	390		20
1-Methylnaphthalene	<20		20
2,4,5-Trichlorophenol	<20		20
2,4,6-Trichlorophenol	<20		20
2,4-Dichlorophenol	<20		20
2,4-Dimethylphenol	<20		20
2,4-Dinitrophenol	<100		100
2,4-Dinitrotoluene	<20		20
2,6-Dinitrotoluene	<20		20
2-Chloronaphthalene	<20		20
2-Chlorophenol	<20		20
2-Methylphenol	<20		20
2-Methylnaphthalene	<20		20
2-Nitroaniline	<100		100
2-Nitrophenol	<100		100
2-Toluidine	<20		20
3 & 4 Methylphenol	<20		20
3,3'-Dichlorobenzidine	<40		40
3,3'-Dimethylbenzidine	<40		40
3-Nitroaniline	<100		100
4,6-Dinitro-2-methylphenol	<100		100
4-Bromophenyl phenyl ether	<20		20
4-Chloro-3-methylphenol	<20		20
4-Chloroaniline	<20		20
4-Chlorophenyl phenyl ether	<20		20
4-Nitroaniline	<100		100
4-Nitrophenol	<100		100
Acenaphthene	<20		20
Acenaphthylene	<20		20
Aniline	<40		40
Anthracene	<20		20
Benzidine	<160		160
Benzo[a]anthracene	<20		20
Benzo[a]pyrene	<20		20
Benzo[b]fluoranthene	<20		20
Benzo[g,h,i]perylene	<20		20
Benzo[k]fluoranthene	<20		20
Benzoic acid	<100		100

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Client Sample ID: MH-6**

Lab Sample ID: 700-8097-1  
Client Matrix: Water

Date Sampled: 12/07/2005 1125  
Date Received: 12/07/2005 1302

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 700-14978	Instrument ID: SMC5973
Preparation: 3520C	Prep Batch: 700-14821	Lab File ID: C120916.D
Dilution: 1.0		Initial Weight/Volume: 100 mL
Date Analyzed: 12/09/2005 2001		Final Weight/Volume: 1.0 mL
Date Prepared: 12/08/2005 0752		Injection Volume:

Analyte	Result (ug/L)	Qualifier	RL
Benzyl alcohol	<20		20
Bis(2-chloroethoxy)methane	<20		20
Bis(2-chloroethyl)ether	<20		20
Bis(2-ethylhexyl) phthalate	<20		20
2,2'-oxybis(2-chloropropane)	<20		20
Butyl benzyl phthalate	<20		20
Chrysene	<20		20
Di-n-butyl phthalate	<20		20
Di-n-octyl phthalate	<20		20
Dibenz(a,h)anthracene	<20		20
Diethyl phthalate	<20		20
Dimethyl phthalate	<20		20
Dinoseb	<20		20
Diphenylamine	<20		20
Dibenzofuran	<20		20
Fluoranthene	<20		20
Fluorene	<20		20
Hexachlorobenzene	<20		20
Hexachlorocyclopentadiene	<20		20
Hexachloroethane	<20		20
Hexachlorobutadiene	<20		20
Indeno[1,2,3-cd]pyrene	<20		20
Isophorone	<20		20
N-Nitrosodi-n-propylamine	<20		20
N-Nitrosodimethylamine	<20		20
N-Nitrosodiphenylamine	<20		20
Naphthalene	<20		20
Nitrobenzene	<20		20
Pentachlorophenol	<100		100
Phenanthrene	<20		20
Phenol	<20		20
Pyrene	<20		20
Pyridine	<100		100
Tetrachlorophenol	<20		20
Carbazole	<20		20

Surrogate	%Rec	Acceptance Limits
Terphenyl-d14	25	16 - 158
2,4,6-Tribromophenol	33	14 - 93
2-Fluorobiphenyl	27	34 - 118
2-Fluorophenol	50	25 - 102
Nitrobenzene-d5	97	39 - 133
Phenol-d5	7	21 - 95

# Analytical Data

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Client Sample ID: MH-6**

Lab Sample ID: 700-8097-1  
Client Matrix: Water

Date Sampled: 12/07/2005 1125  
Date Received: 12/07/2005 1302

## 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C  
Preparation: 3520C  
Dilution: 1.0  
Date Analyzed: 12/09/2005 2001  
Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14978  
Prep Batch: 700-14821

Instrument ID: SMC5973  
Lab File ID: C120916.D  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Method: 8270C  
Preparation: 3520C  
Dilution: 1.0  
Date Analyzed: 12/12/2005 1243  
Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14987  
Prep Batch: 700-14821

Instrument ID: Agilent GC/MS 5973  
Lab File ID: D121205A.D  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Analyte	Result (ug/L)	Qualifier	RL
1,2,3,5-Tetrachlorobenzene	<20		20
1,2,3,4 -Tetrachlorobenzene	<20		20
1,2,4,5-Tetrachlorobenzene	<20		20
1,3-Dinitrobenzene	<20		20
1,4-Dinitrobenzene	<20		20
1,4-Naphthoquinone	<20		20
1-Naphthylamine	<20		20
2,6-Dichlorophenol	<20		20
2-Acetylaminofluorene	<20		20
2-Naphthylamine	<20		20
2-Picoline	<20		20
3-Methylcholanthrene	<20		20
4-Aminobiphenyl	<20		20
4-Nitroquinoline-1-oxide	<40		40
7,12-Dimethylbenz(a)anthracene	<20		20
Acetophenone	<20		20
Aramite, Total	<20		20
Diallate	<20		20
Dimethoate	<20		20
Ethyl methanesulfonate	<20		20
Hexachlorophene	<10000		10000
Hexachloropropene	<20		20
Kepone	<20		20
Isosafrole	<20		20
Methapyrilene	<4000		4000
Methyl methanesulfonate	<20		20
5-Nitro-o-toluidine	<20		20
N-Nitrosodi-n-butylamine	<20		20
N-Nitrosodiethylamine	<20		20
N-Nitrosomorpholine	<20		20
n-Nitrosomethylethylamine	<20		20
N-Nitrosopiperidine	<20		20
N-Nitrosopyrrolidine	<20		20
o,o',o"-Triethylphosphorothioate	<20		20

## Analytical Data

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Client Sample ID: MH-6**

Lab Sample ID: 700-8097-1  
Client Matrix: Water

Date Sampled: 12/07/2005 1125  
Date Received: 12/07/2005 1302

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### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	700-14987	Instrument ID:	Agilent GC/MS 5973
Preparation:	3520C	Prep Batch:	700-14821	Lab File ID:	D121205A.D
Dilution:	1.0			Initial Weight/Volume:	100 mL
Date Analyzed:	12/12/2005 1243			Final Weight/Volume:	1.0 mL
Date Prepared:	12/08/2005 0752			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	RL
p-Dimethylamino azobenzene	<20		20
p-Phenylene diamine	<4000		4000
Pentachlorobenzene	<20		20
Pentachloronitrobenzene	<20		20
Pronamide	<20		20
Safrole, Total	<20		20
alpha,alpha-Dimethyl phenethylamine	<4000		4000
1,3,5-Trinitrobenzene	<20		20

## DATA REPORTING QUALIFIERS

Client: Rohm and Haas Company

Job Number: 700-8097-1

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
GC/MS Semi VOA	*	LCS, LCSD, MS, MSD, MD, or Surrogate exceeds the control limits

# **QUALITY CONTROL RESULTS**

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-8097-1

### Surrogate Recovery Report

#### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

##### Client Matrix: Water

<u>Lab Sample ID</u>	<u>Client Sample</u>	<u>(2FP) (%Rec)</u>	<u>(FBP) (%Rec)</u>	<u>(NBZ) (%Rec)</u>	<u>(PHL) (%Rec)</u>	<u>(TBP) (%Rec)</u>	<u>(TPH) (%Rec)</u>
700-8097-1	MH-6	50	27 *	97	7 *	33	25
LCS 700-14821/2-A	LCS	44	78	55	45	29	69
LCSD 700-14821/3-A	LCSD	33	74	50	41	28	66
MB 700-14821/1-A	MB	44	81	54	45	37	66

##### Surrogate

##### Acceptance Limits

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Method Blank - Batch: 700-14821**

**Method: 8270C**  
**Preparation: 3520C**

Lab Sample ID: MB 700-14821/1-A  
Client Matrix: Water  
Dilution: 5.0  
Date Analyzed: 12/09/2005 1817  
Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14978  
Prep Batch: 700-14821  
Units: ug/L

Instrument ID: SMC5973  
Lab File ID: C120913.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Analyte	Result	Qual	RL
1,2,4-Trichlorobenzene	<10		10
1,2-Dichlorobenzene	<10		10
1,2-Diphenylhydrazine	<10		10
1,3-Dichlorobenzene	<10		10
1,4-Dichlorobenzene	<10		10
1,4-Dioxane	<10		10
1-Methylnaphthalene	<10		10
2,4,5-Trichlorophenol	<10		10
2,4,6-Trichlorophenol	<10		10
2,4-Dichlorophenol	<10		10
2,4-Dimethylphenol	<10		10
2,4-Dinitrophenol	<50		50
2,4-Dinitrotoluene	<10		10
2,6-Dinitrotoluene	<10		10
2-Chloronaphthalene	<10		10
2-Chlorophenol	<10		10
2-Methylphenol	<10		10
2-Methylnaphthalene	<10		10
2-Nitroaniline	<50		50
2-Nitrophenol	<50		50
2-Toluidine	<10		10
3 & 4 Methylphenol	<10		10
3,3'-Dichlorobenzidine	<20		20
3,3'-Dimethylbenzidine	<20		20
3-Nitroaniline	<50		50
4,6-Dinitro-2-methylphenol	<50		50
4-Bromophenyl phenyl ether	<10		10
4-Chloro-3-methylphenol	<10		10
4-Chloroaniline	<10		10
4-Chlorophenyl phenyl ether	<10		10
4-Nitroaniline	<50		50
4-Nitrophenol	<50		50
Acenaphthene	<10		10
Acenaphthylene	<10		10
Aniline	<20		20
Anthracene	<10		10
Benzidine	<80		80
Benzo[a]anthracene	<10		10
Benzo[a]pyrene	<10		10
Benzo[b]fluoranthene	<10		10
Benzo[g,h,i]perylene	<10		10

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Method Blank - Batch: 700-14821**

**Method: 8270C**

**Preparation: 3520C**

Lab Sample ID: MB 700-14821/1-A  
 Client Matrix: Water  
 Dilution: 5.0  
 Date Analyzed: 12/09/2005 1817  
 Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14978  
 Prep Batch: 700-14821  
 Units: ug/L

Instrument ID: SMC5973  
 Lab File ID: C120913.D  
 Initial Weight/Volume: 1000 mL  
 Final Weight/Volume: 1.0 mL  
 Injection Volume:

Analyte	Result	Qual	RL
Benzo[k]fluoranthene	<10		10
Benzoic acid	<50		50
Benzyl alcohol	<10		10
Bis(2-chloroethoxy)methane	<10		10
Bis(2-chloroethyl)ether	<10		10
Bis(2-ethylhexyl) phthalate	<10		10
2,2'-oxybis(2-chloropropane)	<10		10
Butyl benzyl phthalate	<10		10
Chrysene	<10		10
Di-n-butyl phthalate	<10		10
Di-n-octyl phthalate	<10		10
Dibenz(a,h)anthracene	<10		10
Diethyl phthalate	<10		10
Dimethyl phthalate	<10		10
Dinoseb	<10		10
Diphenylamine	<10		10
Dibenzofuran	<10		10
Fluoranthene	<10		10
Fluorene	<10		10
Hexachlorobenzene	<10		10
Hexachlorocyclopentadiene	<10		10
Hexachloroethane	<10		10
Hexachlorobutadiene	<10		10
Indeno[1,2,3-cd]pyrene	<10		10
Isophorone	<10		10
N-Nitrosodi-n-propylamine	<10		10
N-Nitrosodimethylamine	<10		10
N-Nitrosodiphenylamine	<10		10
Naphthalene	<10		10
Nitrobenzene	<10		10
Pentachlorophenol	<50		50
Phenanthrene	<10		10
Phenol	<10		10
Pyrene	<10		10
Pyridine	<50		50
Tetrachlorophenol	<10		10
Carbazole	<10		10

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14	66	16 - 158
2,4,6-Tribromophenol	37	14 - 93

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-8097-1

### Method Blank - Batch: 700-14821

**Method: 8270C**  
**Preparation: 3520C**

Lab Sample ID: MB 700-14821/1-A  
Client Matrix: Water  
Dilution: 5.0  
Date Analyzed: 12/09/2005 1817  
Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14978  
Prep Batch: 700-14821  
Units: ug/L

Instrument ID: SMC5973  
Lab File ID: C120913.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Surrogate	% Rec	Acceptance Limits
2-Fluorobiphenyl	81	34 - 118
2-Fluorophenol	44	25 - 102
Nitrobenzene-d5	54	39 - 133
Phenol-d5	45	21 - 95

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Method Blank - Batch: 700-14821**

**Method: 8270C**  
**Preparation: 3520C**

Lab Sample ID: MB 700-14821/1-A  
Client Matrix: Water  
Dilution: 5.0  
Date Analyzed: 12/12/2005 1315  
Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14987  
Prep Batch: 700-14821  
Units: ug/L

Instrument ID: Agilent GC/MS 5973  
Lab File ID: D121206.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Analyte	Result	Qual	RL
1,2,3,4 -Tetrachlorobenzene	<10		10
1,2,3,5-Tetrachlorobenzene	<10		10
1,2,4,5-Tetrachlorobenzene	<10		10
1,3-Dinitrobenzene	<10		10
1,4-Dinitrobenzene	<10		10
1,4-Naphthoquinone	<10		10
1-Naphthylamine	<10		10
2,6-Dichlorophenol	<10		10
2-Acetylaminofluorene	<10		10
2-Naphthylamine	<10		10
2-Picoline	<10		10
3-Methylcholanthrene	<10		10
4-Aminobiphenyl	<10		10
4-Nitroquinoline-1-oxide	<20		20
7,12-Dimethylbenz(a)anthracene	<10		10
Acetophenone	<10		10
Aramite, Total	<10		10
Diallate	<10		10
Dimethoate	<10		10
Diphenylamine	<10		10
Ethyl methanesulfonate	<10		10
Hexachlorophene	<5000		5000
Hexachloropropene	<10		10
Kepone	<10		10
Isosafrole	<10		10
Methapyrilene	<2000		2000
Methyl methanesulfonate	<10		10
5-Nitro-o-toluidine	<10		10
N-Nitrosodi-n-butylamine	<10		10
N-Nitrosodiethylamine	<10		10
N-Nitrosomorpholine	<10		10
n-Nitrosomethylethylamine	<10		10
N-Nitrosopiperidine	<10		10
N-Nitrosopyrrolidine	<10		10
o,o',o"-Triethylphosphorothioate	<10		10
p-Dimethylamino azobenzene	<10		10
p-Phenylene diamine	<2000		2000
Pentachlorobenzene	<10		10
Pentachloronitrobenzene	<10		10
Pronamide	<10		10
Safrole, Total	<10		10

Calculations are performed before rounding to avoid round-off errors in calculated results.

# Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-8097-1

## Method Blank - Batch: 700-14821

Lab Sample ID: MB 700-14821/1-A  
Client Matrix: Water  
Dilution: 5.0  
Date Analyzed: 12/12/2005 1315  
Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14987  
Prep Batch: 700-14821  
Units: ug/L

## Method: 8270C Preparation: 3520C

Instrument ID: Agilent GC/MS 5973  
Lab File ID: D121206.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Analyte	Result	Qual	RL
alpha,alpha-Dimethyl phenethylamine	<2000		2000
1,3,5-Trinitrobenzene	<10		10

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Laboratory Control/  
Laboratory Control Duplicate Recovery Report - Batch: 700-14821**

**Method: 8270C  
Preparation: 3520C**

LCS Lab Sample ID: LCS 700-14821/2-A  
Client Matrix: Water  
Dilution: 5.0  
Date Analyzed: 12/09/2005 1851  
Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14978  
Prep Batch: 700-14821  
Units: ug/L

Instrument ID: SMC5973  
Lab File ID: C120914.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

LCSD Lab Sample ID: LCSD 700-14821/3-A  
Client Matrix: Water  
Dilution: 5.0  
Date Analyzed: 12/09/2005 1926  
Date Prepared: 12/08/2005 0752

Analysis Batch: 700-14978  
Prep Batch: 700-14821  
Units: ug/L

Instrument ID: SMC5973  
Lab File ID: C120915.D  
Initial Weight/Volume: 1000 mL  
Final Weight/Volume: 1.0 mL  
Injection Volume:

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
1,2,4-Trichlorobenzene	58	57	34 - 103	1	28		
1,4-Dichlorobenzene	64	63	30 - 95	1	31		
2,4-Dinitrotoluene	58	66	36 - 129	12	32		
2-Chlorophenol	53	52	45 - 116	1	34		
4-Chloro-3-methylphenol	49	52	48 - 128	6	31		
4-Nitrophenol	34	35	20 - 144	4	44		
Acenaphthene	41	42	34 - 134	1	35		
N-Nitrosodi-n-propylamine	61	62	38 - 125	2	30		
Pentachlorophenol	40	40	34 - 133	0	33		
Phenol	43	40	32 - 122	7	36		
Pyrene	68	71	32 - 122	4	42		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
Terphenyl-d14	69		66		16 - 158		
2,4,6-Tribromophenol	29		28		14 - 93		
2-Fluorobiphenyl	78		74		34 - 118		
2-Fluorophenol	44		33		25 - 102		
Nitrobenzene-d5	55		50		39 - 133		
Phenol-d5	45		41		21 - 95		

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LOGIN SAMPLE RECEIPT CHECK LIST

Client: Rohm and Haas Company

Job Number: 700-8097-1

**Login Number: 8097**

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.4
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	NA	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present	True	
Samples do not require splitting or compositing	True	



# ATTACHMENT E

## CONSENT DECREE

*United States of America and the State of Mississippi v. Morton International, Inc.*, Civil Action No. 1:00CV501 (BrR)

Attachment A: “3013 Order”

Attachment B: “Action Levels”

Attachment C: “Corrective Measures Study (“CMS”) Outline”

Attachment D: “RCRA Corrective Action Plan”

*Revised Groundwater Monitoring Plan* (Parsons, November 2, 2016)

\*Note: Groundwater Plan is included in this permit with the appendices omitted. See application for complete version.

# ROHM AND HAAS

ROHM AND HAAS COMPANY  
100 INDEPENDENCE MALL WEST, PHILADELPHIA, PA 19106-2399 USA  
TELEPHONE: (215) 592-3000 FAX: (215) 592-3227



## Moss Point Consent Decree

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF MISSISSIPPI  
BILOXI DIVISION

UNITED STATES OF AMERICA AND )  
THE STATE OF MISSISSIPPI )

Plaintiffs, )

v. )

MORTON INTERNATIONAL, INC., )

Defendant. )

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Civil Action No.

**CONSENT DECREE**

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§ 7401 *et seq.*; the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. § 11001 *et seq.*; and the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 *et seq.* This action also seeks injunctive relief and penalties pursuant to the Mississippi Solid Wastes Disposal Law of 1974, Miss. Code Ann. §§ 17-17-1 *et seq.*, the Mississippi Air and Water Pollution Control Law, Miss. Code Ann. 49-17-1 *et seq.*, and the organic act of the Commission and of the Mississippi Department of Environmental Quality, Miss. Code Ann. § 49-2-1 *et seq.* (referred to herein as the Mississippi Analog(s)) against Defendant Morton International, Inc. The claims arise with respect to Morton's ownership and operation of its chemical manufacturing facility located at 5724 Elder Ferry Road, Moss Point, Jackson County, Mississippi ("Moss Point Facility," as hereinafter defined);

WHEREAS, EPA and MDEQ have determined that the presence or release of Hazardous Wastes (as hereinafter defined) at Morton's Moss Point Facility may present a substantial hazard to human health or the environment. As a result, EPA issued an Order pursuant to Section 3013 of RCRA, 42 U.S.C. § 6934, requiring Morton to conduct a comprehensive environmental analysis of the entire Moss Point Facility to determine the nature and extent, if any, of the hazard the site poses to human health or the environment. The 3013 Order is appended to this Consent Decree as Attachment A and incorporated herein by reference and is fully enforceable hereunder;

WHEREAS, Rohm and Haas Company ("Rohm and Haas"), the parent corporation of Morton, is committed to the ongoing implementation of its comprehensive Environmental Management System at the acquired Morton facilities in order to promote long-term environmental compliance;

WHEREAS, the Parties agree, and this Court finds, that this Consent Decree has been negotiated by the Parties in good faith, that implementation of this Consent Decree will avoid

prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest;

WHEREAS, the Parties agree that by entering into this Consent Decree Morton has not admitted the truth of any allegation in the Complaint but agrees not to contest venue and subject matter and personal jurisdiction; and

WHEREAS, the Parties, without the necessity of trial or adjudication of any issues of fact or law, and without any admission of liability by Morton, consent to entry of this Consent Decree resolving Plaintiffs' claims.

**NOW, THEREFORE, IT IS ADJUDGED, ORDERED AND DECREED THAT:**

**I. DEFINITIONS**

1. Unless otherwise expressly provided herein, terms used in this Consent Decree or its Attachments that are defined in RCRA, 42 U.S.C. § 6901 *et seq.*, CWA, 33 U.S.C. § 1251 *et seq.*, the CAA, 42 U.S.C. § 7401 *et seq.*, the SDWA, 42 U.S.C. § 300f *et seq.*, CERCLA, 42 U.S.C. § 9601 *et seq.*, or EPCRA, 42 U.S.C. § 1101 *et seq.*, or in regulations promulgated thereunder, shall have the meaning assigned to them in such statutes or in such regulations. Whenever terms listed below are used in this Consent Decree or in the Attachments hereto and incorporated hereunder, the following definitions shall apply:

a) "Action Plan" shall mean the plan Morton prepares to correct current noncompliances and to adequately correct, mitigate, or address environmental harm identified in the Audit Findings for each Audit Facility (as hereinafter defined);

b) "Audit Facility or Facilities" shall mean those facilities listed in Attachment F, which are subject to the National Audit provisions of this Consent Decree;

c) "Audit Finding" shall mean a written summary prepared by the Consultant Auditor covering violations identified and environmental harm discovered consistent with the purpose and scope of the National Audit set forth in Paragraph 38;

d) "Audit Report" shall mean a report setting forth the Audit Findings resulting from the audit of an Audit Facility by the Consultant Auditor, that meets all of the requirements set forth in Section VI (B) (National Audit) of this Consent Decree;

e) "Audits" or "National Audit" shall mean audits conducted by a third party as set forth herein in Section VI(B) (National Audit) at the Audit Facilities listed in Attachment F;

f) "Certify" or "Certification" shall mean to certify, or a certification given, in accordance with the provisions set forth in Paragraphs 91 and 101 of this Consent Decree;

g) "Compliance Certification(s)" shall mean those Environmental Requirements identified in Paragraphs 73 and 85 to which Morton shall certify current compliance;

h) "Compliance Plan" shall mean the plan set forth in Section VIII (Compliance Plan) that identifies the Compliance Certifications, Environmental Management Procedures, and Interim Operating Conditions that Morton shall undertake or follow to achieve and maintain compliance with the CWA, RCRA, SDWA, CAA, EPCRA, CERCLA, and their Mississippi Analogs at the Moss Point Facility and Electronic Materials Facility (as hereinafter defined);

i) "Consent Decree" shall mean this Decree and all Attachments hereto and incorporated plans and any modifications thereto made in accordance with Section XXVI (Modifications) of this Consent Decree. In the event of conflict between this Decree and any Attachment, Appendix, or incorporated plan, this Decree shall control;

j) "Consultant Auditor" shall mean the independent third-party company(ies) hired by Morton and approved by EPA to conduct an environmental compliance audit of each of the

Audit Facilities listed in Attachment F and who meets the requirements set forth in Paragraph 39 of the Consent Decree;

k) "Corrective Action" shall mean those measures and actions associated with the ongoing and future investigation, study and remediation of releases of Hazardous Wastes or Hazardous Constituents into the environment from the Moss Point Facility including closure and post-closure care;

l) "Corrective Measures" shall mean those measures or actions necessary to remediate, control, prevent, or mitigate a release or potential release from the Moss Point Facility of Hazardous Waste or Hazardous Constituents into the environment or within or from one media to another;

m) "Corrective Steps" shall mean with respect to the Audit Facilities, those measures or actions identified in the Action Plan that are intended to address the Audit Findings;

n) "CAA" shall mean the Clean Air Act, 42 U.S.C. §§ 7401 to 7671q and the corresponding Mississippi Analog (as hereinafter defined);

o) "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601 to 9675;

p) "CWA" shall mean the Federal Water Pollution Control Act, 33 U.S.C. §§ 1251-1387 (also known as the Clean Water Act) and the corresponding Mississippi Analog;

q) "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or federal or State of Mississippi holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or State of Mississippi holiday, the period shall run until the close of business of the next working day;

r) “Defendant” means Morton International, Inc. (“Morton”), a corporation organized and existing under the laws of Indiana and licensed to do business in Mississippi, and which has been a wholly owned subsidiary of Rohm and Haas since June 21, 1999;

s) “Dispute Resolution” means the process for resolving disputes as provided in Section XVIII (Dispute Resolution);

t) “DOJ” means the United States Department of Justice and any successor departments or agencies of the United States;

u) “Electronic Materials Facility” or “EMF” means the chemical manufacturing facility located at 5712 Elder Ferry Road, Moss Point, Jackson County, Mississippi, owned by Morton International and operated by Shipley Company LLC, and which is “on-site” as defined in 40 C.F.R. § 260.10 and MHWMR pt. 260 with respect to the Moss Point Facility.

v) “Environmental Compliance Auditing Procedures” shall mean the Environmental Compliance Auditing Procedures set forth in Attachment G;

w) “Environmental Management Procedure(s)” shall mean a procedure that is developed under Paragraphs 74 and 85 to maintain compliance.

x) “Environmental Requirements” shall mean all applicable federal, state, and local environmental statutes and regulations, including permits and enforceable agreements between Morton and the respective environmental regulatory agencies;

y) “EPA” means the United States Environmental Protection Agency and any successor departments or agencies of the United States;

z) “EPCRA” shall mean the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. §§ 11001 to 11050;

aa) "Evaluation Report" is the Report referenced in Paragraph 79 that evaluates the economic and technical feasibility of ending disposal in, and the plugging and abandoning of, the Injection Wells (as hereinafter defined);

bb) "Hazardous Constituents" shall mean those constituents listed in Appendix VIII of 40 C.F.R. Part 261 or any constituent identified in Appendix IX of 40 C.F.R. Part 264 or any approved subset of Appendix IX of 40 C.F.R. Part 264;

cc) "Hazardous Waste" shall mean hazardous waste as defined in 40 C.F.R. § 261.3 and MHWMR Part 261;

dd) "Injection Wells" mean Injection Well #1, UIC Permit No. MSI 1005, and Injection Well #3 - Sidetrack, UIC Permit No. MSI 1006;

ee) "Interim Operating Condition(s)" shall mean those terms and conditions identified in Paragraphs 83 and 85 that, under the authority of this Consent Decree, shall constitute authorized operation of the Moss Point Facility and EMF if complied with during the periods specified in such Paragraphs;

ff) "Interest" shall mean interest at the rate established by the Secretary of Treasury pursuant to 31 U.S.C. § 3717. Such interest shall be compounded annually on October 1st of each year;

gg) "LDR" means land disposal restrictions promulgated pursuant to 42 U.S.C. § 6924 and codified at 40 C.F.R. Parts 148 and 268;

hh) "Mississippi Commission on Environmental Quality" or "Commission" shall mean the agency of the State of Mississippi created by Miss. Code Ann. § 49-2-5 (Rev. 1999);

ii) "Mississippi Department of Environmental Quality" or "MDEQ" shall mean the agency of the State of Mississippi created by Miss. Code Ann. § 49-2-7 (Rev. 1999);

jj) "Moss Point Facility" means the chemical manufacturing facility located at 5724 Elder Ferry Road, Moss Point, Jackson County, Mississippi, owned and operated by Morton;

kk) "Mississippi Environmental Laws" or "Mississippi Analog(s)" means the Mississippi Solid Wastes Disposal Law of 1974, Miss. Code Ann. §§ 17-17-1 *et seq.*, the Mississippi Air and Water Pollution Control Law, Miss. Code Ann. §§ 49-17-1 *et seq.*, the organic act of the Commission and of MDEQ, Miss. Code Ann. §§ 49-2- 1 *et seq.*, and the regulations promulgated thereunder including, but not limited to, the Mississippi Hazardous Waste Management Regulations ("MHWMR");

ll) "Notify" and "Submit" and other terms signifying an obligation to transmit or communicate documents and information mean to deliver in person, deposit in the United States mail (certified, return receipt requested), send by facsimile, dispatch by express courier, or transmit by electronic mail (with a copy to follow by one of the other approved methods of transmission) not later than the day that such transmission or communication is required by this Consent Decree. Should such day be a weekend day or a federal or state holiday, the delivery, deposit, or dispatch shall be due on the next business day;

mm) "Paragraph" shall mean a portion of this Consent Decree identified by an Arabic numeral or a lower case letter;

nn) "Parties" shall mean the United States, the State of Mississippi and Morton International, Inc.;

oo) "Permit Board" shall mean the Mississippi Environmental Quality Permit Board created by Miss. Code Ann. § 49-17-28 (Rev. 1999);

pp) "Permit" shall mean any permit issued by an applicable federal, state, tribal, or local agency;

qq) “Plaintiffs” shall mean the United States of America and the State of Mississippi (acting through the Mississippi Commission on Environmental Quality); however, this term shall not include the State of Mississippi with respect to matters that pertain only to the National Audit;

rr) “Plant SEP” shall mean the Supplemental Environmental Project with regard to the Moss Point Facility to be undertaken pursuant to Section VII (SEPs);

ss) “RCRA” shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 *et seq.* (also known as the Resource Conservation and Recovery Act) and the corresponding Mississippi Analog, where applicable;

tt) “SDWA” shall mean the Safe Drinking Water Act, 42 U.S.C. §§ 300f to 300j-26 and the corresponding Mississippi Analog;

uu) “Section” shall mean a portion of this Consent Decree identified by a Roman numeral;

vv) “Site Evaluation” shall mean the investigation and characterization of the nature, extent, direction, rate, movement, concentration and sources of releases of Hazardous Wastes or Hazardous Constituents into the environment from the Moss Point Facility as provided for in the Section 3013 Order and all work plans approved under such Order;

ww) “Site Evaluation Report(s)” and “Site Evaluation Work Plan(s)” shall mean the reports and work plans required to be submitted under the Section 3013 Order as part of the Site Evaluation of the Moss Point Facility;

xx) “State” shall mean the State of Mississippi, acting through the Mississippi Commission on Environmental Quality;

yy) “United States” shall mean the United States of America, including its departments, agencies and instrumentalities;

zz) “Well Continuation Period” shall mean the period through March 31, 2005, unless extended or shortened as provided in Paragraph 77, during which Morton may continue injection in the Injection Wells while Morton implements the Plant SEP in accordance with Section VII (SEPs); and

aaa) “Work” shall mean all activities Morton is required to perform under this Consent Decree, together with its Attachments.

## **II. JURISDICTION**

2. This Court has jurisdiction over the subject matter and over the Parties pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, because: 1) the action arises in part under the laws of the United States; 2) the United States is a Plaintiff; and 3) the action is brought in part to recover penalties incurred under Acts of Congress. This Court also has jurisdiction over the subject matter of this action pursuant to Section 1423(b) of the SDWA, 42 U.S.C. § 300h-2(b), Section 3008(a) and (h) of RCRA, 42 U.S.C. § 6928(a) and (h), Section 309(b) of the CWA, 33 U.S.C. § 1319(b), and Section 113 of the CAA, 42 U.S.C. § 7413. This Court further has supplemental jurisdiction pursuant to 28 U.S.C. § 1367(a) of the claims of the State. This Court also has personal jurisdiction over Morton.

Solely for the purposes of this Consent Decree and the underlying Complaint, Morton waives all objections and defenses that it may have to jurisdiction of the Court or to venue in this District. Morton shall not challenge the terms of this Consent Decree or this Court’s jurisdiction to enter and enforce this Consent Decree. Morton shall identify the name, address and telephone number of an agent who is authorized to accept service of process by mail

on behalf of Morton with respect to all matters arising under or relating to this Consent Decree. Morton hereby agrees to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

### **III. PARTIES BOUND AND NOTICE OF TRANSFER**

3. The provisions of this Consent Decree shall apply to and be binding upon the United States and the State of Mississippi and upon Morton and its successors and assigns. Each party certifies that at least one of its undersigned representatives is fully authorized by the party whom he or she represents to enter into the terms and conditions of this Consent Decree, to execute it on behalf of that party, and to legally bind the party on whose behalf he or she executes this Consent Decree.

4. Whenever this Consent Decree provides that Plaintiffs, or more than one agency, department or commission of Plaintiffs, shall approve or disapprove a submission, identify and comment on deficiencies in a submission, impose requirements or otherwise decide a matter, Plaintiffs shall use best efforts to reach a collective decision on the submission, comments, requirements and matter. Such decision shall not be final and binding on Morton unless it is and is represented to be the collective decision of Plaintiffs.

5. Except as provided in Paragraph 6 and unless otherwise agreed by the Plaintiffs, the following provisions shall apply to the matters discussed herein. No change in ownership, corporate, or partnership status relating to the Moss Point Facility or an Audit Facility, or conveyance of title, easement, or other interest in the Moss Point Facility or an Audit Facility, including but not limited to any lease or transfer of assets or real or personal property, regardless of whether Morton continues to exist following the transaction, shall affect Morton's obligations

hereunder. In the event that any conveyance or lease of property at the Moss Point Facility or an Audit Facility entails the usage by another person of the Moss Point Facility, or any portion thereof, which are subject to Environmental Requirements, then it shall be Morton's obligation to provide by contract compliance by that person with the relevant portions of the Consent Decree, and to reserve the right to monitor compliance by that person. Morton shall remain liable to Plaintiffs for any stipulated penalties that may accrue due to any non-compliance by that person. In all cases, it shall be Morton's obligation with respect to any conveyed or leased portion of the Moss Point Facility or an Audit Facility to ensure access to property and information pursuant to this Consent Decree. Any deed, title, or other instrument of conveyance shall contain a notice that the Moss Point Facility or the Audit Facility is the subject of this Consent Decree, setting forth the case caption and index number, and the Court having jurisdiction.

6. In the event of the sale of an Audit Facility before performance of the on-site visit by the Consultant Auditor, Morton shall be obligated to (a) pay for the full cost of the audit at that Audit Facility; (b) notify the purchaser or transferee of this Consent Decree and Morton's obligations with respect to the National Audit and provide a copy of the Consent Decree to such purchaser or transferee, and (c) require contractually that the purchaser or transferee provide access to and cooperate with the United States and the Consultant Auditor in the performance of an audit of such facility. Upon satisfaction of the obligations set forth in the preceding sentence, Morton's obligations hereunder shall cease with regard to the Audit Facility sold.

7. Morton shall provide to each company it hires to manage any of the Work (as defined above) required by this Consent Decree or its Attachments, a copy of all Sections of this Decree or Attachments relevant to the contractor's employment, and shall condition all such

contracts entered into upon performance of the Work in conformity with the terms of this Consent Decree and its Attachments. Morton nonetheless shall be responsible for ensuring that the Work herein is completed in accordance with this Consent Decree.

8. Nothing in this Consent Decree is intended either to create any rights in or grant any cause of action to any person not a party to this Consent Decree or to release or waive any claim, cause of action, demand, or defense in law or equity that any party to this Consent Decree may have against any person(s) or entity not a party to this Consent Decree.

#### **IV. OBJECTIVES**

9. The purposes of the parties in entering into this Consent Decree are to:
- a) resolve all pending claims according to the terms and subject to the reservations set forth herein, without admission of fact or liability or the necessity of further litigation;
  - b) assure that Morton complies with all applicable Environmental Requirements;
  - c) correct environmental harm resulting from violations of Environmental Requirements;
  - d) protect, in accordance with applicable law, human health and the environment from risks arising from any releases or threatened releases of Hazardous Waste or Hazardous Constituents through a thorough, non-duplicative investigation and remediation;
  - e) enable the Moss Point Facility to operate while achieving compliance in accordance with the requirements of this Consent Decree;
  - f) perform audits as set forth herein at the Audit Facilities;
  - g) implement Supplemental Environmental Projects (“SEPs”) as set forth herein;

h) promote the ongoing implementation of Rohm and Haas' Environmental Management System, or a substantially comparable system, at the Moss Point Facility and the Audit Facilities; and

i) provide for the payment of a civil penalty.

#### **V. GENERAL PROVISIONS**

10. **Compliance with Applicable Law:** Except as otherwise provided in this Consent Decree, all activities undertaken by Morton pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal, state, and local laws, permits, and regulations, including, without limitation, federal and state regulations governing the generation, treatment, storage, transport, and disposal of Hazardous Waste.

11. **Permits:** Except as otherwise provided in this Consent Decree, where any portion of the Work requires a federal, state, or local permit or approval, Morton shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

12. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal, state, or tribal statute or regulation.

#### **VI. WORK TO BE PERFORMED/COMPLIANCE SCHEDULE**

##### **A. 3013 Order/Corrective Action at Moss Point Facility**

13. **Site Evaluation.** Morton shall conduct a Site Evaluation of the Moss Point Facility and submit Site Evaluation Report(s) of the findings in the manner and by the dates specified in the RCRA Section 3013 Order, and all work plans approved under such Order. The Section 3013 Administrative Order, Docket No. RCRA-4-99-005, is attached hereto as Attachment A, incorporated by reference herein, and fully enforceable under this Consent Decree. For purposes of this Consent Decree, all references to "EPA" in the 3013 Order shall be

considered to be "Plaintiffs," and Plaintiffs shall exercise their rights and obligations jointly as provided in Paragraph 4.

14. As the Site Evaluation proceeds, Morton may propose risk-based concentrations or other investigation endpoints that, if approved by Plaintiffs, would be used to limit the scope of the investigation to delineate the extent of contamination at the Moss Point Facility. Plaintiffs' decision to approve the use of such risk-based concentrations or other investigation endpoints shall be based on a demonstration that delineation beyond the risk-based concentrations or other investigation endpoints is not necessary to determine: a) whether corrective measures should be undertaken; or b) what the corrective measures, if any, should be. Procedures regarding review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution and disapproval of such submission shall be governed by Paragraph 32.

15. Morton shall propose action levels for each of the Hazardous Waste or Hazardous Constituent contaminants of concern. Such action levels shall be proposed in the Site Evaluation Report at the conclusion of the entire Site Evaluation (hereafter "Final Site Evaluation Report"), and may also be proposed in any other Site Evaluation Report that is submitted at the end of any phase of the Site Evaluation. Action levels shall be calculated as specified in Attachment B — "Action Levels," unless Morton submits information and data to Plaintiffs for their approval that demonstrate that other alternative action levels, as specified by Morton, are more appropriate for the Moss Point Facility and are protective of human health and the environment. Morton shall also propose and support in the Final Site Evaluation Report whether a corrective measure study ("CMS") should be undertaken, and if so, for which contaminants, media, pathways, and units.

16. Morton may submit for consideration by Plaintiffs a risk assessment to support any of its proposals during the Site Evaluation or Corrective Measures Study, and at any other time if approved by Plaintiffs. This demonstration may include calculations based on a site-specific risk assessment which considers exposure pathways, land uses, receptor populations, and risk targets that are consistent with appropriate EPA and state guidance and site-specific factors, including the Risk Assessment Guidance for Superfund, Volume I Human Health Manual Part B (US EPA 1989d, 1991c) and Volume II regarding ecological receptors.

17. Plaintiffs shall review each Site Evaluation Report, including any action levels and CMS recommendations, and either approve it or identify and explain its deficiencies in writing. This decision shall be based on whether the Site Evaluation Report meets the requirements of its approved Site Evaluation Work Plan, and with respect to the Final Site Evaluation Report, whether it also provides sufficient information to support the CMS recommendation therein, and whether the CMS Recommendation is consistent with what is necessary to protect human health and the environment. The procedures regarding review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution and disapproval of each Site Evaluation Report shall be governed by Paragraph 32.

18. Corrective Measures Study Work Plan. If, after reviewing the Final Site Evaluation Report, Plaintiffs decide a CMS is required, within ninety (90) days after receipt of written notification by Plaintiffs to conduct a CMS, Morton shall prepare and submit a CMS Work Plan. This CMS Work Plan shall be developed to meet the requirements of Attachment C, "Corrective Measure Study ("CMS") Outline" that are relevant under the circumstances at the Moss Point Facility. Morton may also conduct a CMS with respect to certain media, pathways, units or other phases of the investigation that have been completed, while concurrently

continuing to investigate other media, pathways, units or other phases of the investigation that have not been completed. Morton must provide sufficient written justification or documentation for any unit or pathway deleted from the CMS Work Plan and for any omission or deviation from the requirements of Attachment C.

19. Plaintiffs shall, in writing, either approve the CMS Work Plan or identify and explain its deficiencies based on a decision that the CMS Work Plan is not consistent with the requirements of Attachment C that are relevant to the Moss Point Facility. The procedures regarding review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution and disapproval of the CMS Work Plan shall be governed by Paragraph 32.

20. CMS Work Plan Implementation and Report. Morton shall begin to implement the approved CMS Work Plan according to the schedule specified therein. The CMS Report shall summarize any bench-scale or pilot tests and shall include an evaluation of each remedial alternative identified in the CMS Work Plan. The CMS Report also shall recommend those Corrective Measures, if any, that are necessary to protect human health and the environment at the Moss Point Facility, including, if any, remedial technology (including, where applicable, innovative treatment technologies), cleanup targets, and points of compliance. The CMS Report must contain adequate information to support Morton's recommendations.

21. Plaintiffs shall approve the CMS Report or identify and explain the deficiencies in the CMS Report based on whether the CMS Report meets the requirements of the approved CMS Work Plan and provides sufficient information to support the Corrective Measures recommendation. The procedures regarding review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution and disapproval of the CMS Report with regard to the two criteria in the previous sentence shall be governed by Paragraph 32.

22. Plaintiffs shall also review the Corrective Measures recommendation, and if they agree with it, they shall make the CMS Report available to the public for notice and comment. If Plaintiffs do not agree with the recommended Corrective Measures, they shall identify in writing to Morton the deficiencies and instruct Morton on the changes Morton must make to the recommended corrective measures in the CMS Report. Within thirty (30) days, Morton shall make the changes and resubmit the CMS Report to Plaintiffs. Morton may qualify any required change as not being Morton's recommendation in the CMS Report. Except as provided in Paragraphs 21 and 24, Morton shall have no right to challenge through Dispute Resolution Plaintiffs' required changes to the CMS Report. Rather, Plaintiffs shall make available to the public for review and comment the resubmitted CMS Report with the required changes. Morton, along with any other member of the public, may submit comments on the CMS Report. The public review and comment period shall extend for at least thirty (30) calendar days. Plaintiffs shall make available to the public for review and comment, a summary of Plaintiffs' proposed corrective measures and justification therefor (hereafter "Statement of Basis"). If requested, Plaintiffs may provide for a public meeting.

23. Morton shall establish a document repository for the administrative record at a local public library in close proximity to the Moss Point Facility. Morton shall provide for inclusion in the repository all approved reports (Site Evaluation, CMS and CMI) and any other pertinent documents at the direction of Plaintiffs to be placed in the repository.

24. Following the public review and comment period described above, Plaintiffs shall notify Morton in writing of the Corrective Measures selected by Plaintiffs for the Facility. If the Corrective Measures recommended in the CMS Report are not the Corrective Measures selected by Plaintiffs after consideration of public comments, Plaintiffs shall inform Morton in writing of

the reasons for the decision. The remedy selection shall be based on protection of human health and the environment, as per specific site conditions, existing regulations, and guidance. If Morton agrees with the selected Corrective Measures, Morton shall revise and resubmit the CMS Report to reflect the selected Corrective Measures, as necessary. If Morton disagrees with all or part of the selected Corrective Measures, it may submit the matter to Dispute Resolution in accordance with Paragraph 32.

25. Corrective Measures Implementation Work Plan. Within one hundred and twenty (120) days from receipt of the notice of Plaintiffs' selection of the corrective measures for the Moss Point Facility, Morton shall submit a Corrective Measures Implementation ("CMI") Work Plan in accordance with Attachment D, Chapter V, CMI in Corrective Action Plan, OSWER Dir. 9902.3-2A (May 1994) (hereafter "Chapter V of CAP"). The CMI Work Plan shall be developed to meet the requirements of Attachment D that are relevant under the circumstances at the Moss Point Facility. The CMI Work Plan also shall be developed to implement the selected corrective measures and shall address the design, construction, operation, maintenance and monitoring of the selected corrective measures at the Moss Point Facility. Morton must provide sufficient written justification or documentation for any omission or deviation from the requirements of Attachment D.

26. Plaintiffs shall, in writing, either approve the CMI Work Plan or identify and explain its deficiencies based on a decision that the CMI Work Plan is not consistent with those requirements of Attachment D that are relevant to the Moss Point Facility. The procedures regarding review, approval, identification, and explanation of deficiencies, resubmission, cure, Dispute Resolution, and disapproval of the CMI Work Plan shall be governed by Paragraph 32, and Morton shall have no less than ninety (90) days to resubmit the CMI Work Plan.

27. At any time after completion of construction of the remedial technology and commencement of remedial operations, Morton may in writing request that the remainder of the CMI and the other Corrective Action obligations in this Consent Decree be conducted and completed outside of this Consent Decree. Plaintiffs shall approve the request if the remedial technology is operating in a manner designed to meet the performance objectives of the corrective measures. The procedures regarding review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution and disapproval of the request shall be governed by Paragraph 32. If Plaintiffs approve the request, the remaining work and obligations shall be specified in a permit, order, or other mechanism, and the Corrective Action requirements in this Consent Decree shall be deemed to have been completed under Section XIV (Completion). Plaintiffs shall notify Morton in writing that the Corrective Action has been completed, which notice shall constitute an Acknowledgment of Partial Completion under Section XIV (Completion). If the request is not approved and no subsequent request is approved, or if Morton does not submit such request, the Corrective Action shall be considered complete after Morton has submitted and Plaintiffs have approved a Corrective Measures Completion Report that is consistent with Section VII of Attachment D. Procedures regarding review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution and disapproval of the Corrective Measures Completion Report shall be governed by Paragraph 32. Upon approval of the Corrective Measures Completion Report, the Corrective Action requirements of this Consent Decree shall be deemed to have been completed under Section XIV. Plaintiffs shall notify Morton in writing that the Corrective Action has been completed, which notice shall constitute an Acknowledgment of Partial Completion under Section XIV.

28. Modifications. A scope of work, work plan, or deadline may be modified by written agreement of Plaintiffs and Morton and incorporated herein by reference. Such agreement to modify does not require approval by the Court and shall be effective upon its signature by the appropriate representatives of Plaintiffs, after signature by Morton.

29. Interim Measures. Plaintiffs may require Morton in writing to undertake interim measures to achieve the goal of stabilization in order to control or abate actual threats to human health or the environment from releases or potential releases of Hazardous Waste or Hazardous Constituents while long term corrective measures alternatives are being evaluated. Such written notice shall identify the required interim measures and explain why they are necessary to protect human health and the environment.

30. Interim Measures Work Plan. Within sixty (60) calendar days of receipt of Plaintiffs' notification that Morton must undertake an interim measure, or of a final decision if the requirements are submitted to Dispute Resolution, Morton shall submit to Plaintiffs an Interim Measures ("IM") Work Plan designed to implement the interim measure selected by Plaintiffs, or such other interim measures agreed to by the Parties, in accordance with Attachment E, "Scope of Work for Interim Measures Implementation." The IM Work Plan shall ensure that the IM is designed to achieve the goal of stabilization in order to control or abate actual threats to human health or the environment from releases or potential releases of Hazardous Waste or Hazardous Constituents while long term corrective measures alternatives are being evaluated. Where possible, the IM should be designed to contribute to the performance of long term corrective measures. The IM Work Plan shall also provide for submission of a health and safety plan, a public involvement plan if requested by Plaintiffs, and an IM Final Report after completion of the IM. Plaintiffs shall review the IM Work Plan and either approve

it or identify and explain its deficiencies in writing based on a decision that the Work Plan is not consistent with the criteria specified in this Paragraph. Procedures regarding review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution and disapproval of such IM Work Plan shall be governed by Paragraph 32.

31. Interim Measures Implementation. Morton shall implement the IM as specified in the approved IM Work Plan, unless Plaintiffs and Morton agree to modify the requirements therein. Procedures regarding review, approval, identification, and explanation of deficiencies, resubmission, cure, Dispute Resolution, and disapproval of submissions during implementation and after completion of the IM shall be governed by Paragraph 32.

32. Review and Approval. For each Corrective Action submission in this Section that requires Plaintiffs' approval, Plaintiffs shall review and, with written notice to Morton, approve it or identify the deficiencies and explain why they do not meet the criteria for approval that are identified for such submission in this Section. If not approved, Morton shall revise and resubmit the document within the time period specified for such resubmission in this Section, or if none is specified, in a time period no more than sixty (60) calendar days following receipt of the written notice identifying and explaining the deficiencies. Morton may request an extension of any resubmission time period, and Plaintiffs shall not unreasonably withhold approval of such request. The resubmitted document shall address each identified deficiency. With written notice to Morton, Plaintiffs shall approve the resubmitted document or identify the deficiencies and explain why each deficiency does not meet the criteria for approval. Should Plaintiffs not approve the resubmission, Morton shall have ten (10) days from receipt of the notice of deficiencies to either cure the deficiencies that are identified and explained in the notice or invoke Dispute Resolution. If Morton submits a proposed cure and Plaintiffs concur that the

deficiencies have been cured, Plaintiffs shall approve the final submission and notify Morton in writing of same. Morton shall then proceed with the approved Work, if any. If Plaintiffs do not approve such proposed cure, the Parties may submit the matter to Dispute Resolution, and stipulated penalties, as applicable, shall accrue from the receipt of the initial notice of deficiency. If instead of proposing a cure, Morton invokes Dispute Resolution, such invocation shall not relieve Morton of its requirements under this Consent Decree to take action or submit deliverables, and any stipulated penalties for failure to take action or submit deliverables shall begin to accrue from receipt of the initial notice of deficiency until the action or deliverable is satisfied, and shall be paid if Plaintiffs prevail in such Dispute Resolution. Notwithstanding the foregoing, the accrual of stipulated penalties for a dispute involving selection of corrective measures under Paragraphs 22 and 24 shall be limited to thirty (30) days after submission of the dispute to the District Court. In Dispute Resolution, the District Court shall review and uphold a decision by Plaintiffs, including disapproval of a submission, if such decision is consistent with what is necessary to protect human health and the environment, and with all other criteria that are identified in this Section for review and approval of the submission. The District Court's review shall be in accordance with 5 U.S.C. § 706.

33. Integration of Corrective Action Obligations. Except as otherwise provided in this Consent Decree and until termination thereof, the Corrective Action provisions in this Part, as well as the other provisions contained herein relating to Work performed at the Moss Point Facility are intended to be the sole mechanisms under which Morton is required to conduct Corrective Action investigation, study, and remediation. The corrective action provisions in the EPA HSWA Permit #88-857-01 issued to Morton on February 27, 1990, and the MDEQ RCRA Permit #88-587-01 issued to Morton on August 26, 1988, both of which have been

administratively extended, shall defer to the terms of the Consent Decree. To the extent any terms or conditions of the corrective action provisions of the permits conflict with or impose conditions upon Morton that differ from those set forth in this Consent Decree, the terms of the Consent Decree shall govern and supersede. Should the EPA HSWA Permit or the MDEQ RCRA Permit be reissued prior to termination of this Consent Decree, Plaintiffs agree that such permits shall include deferral language acknowledging that Morton's corrective action obligations are being addressed pursuant to the terms and conditions of the Consent Decree. In the event that Morton seeks and is granted a corrective action management unit ("CAMU") designation in accordance with 40 C.F.R. § 264.552 pursuant to Morton's corrective action obligations hereunder, such designation shall likewise supersede any inconsistent provision in the EPA HSWA Permit or the MDEQ RCRA Permit. Satisfactory performance of Corrective Action requirements under this Consent Decree shall satisfy comparable requirements under the existing HSWA and RCRA Permits. If any requirements for investigation, study, or remediation in the HSWA Permit or RCRA Permit have not been satisfied, and satisfying them is determined by the permitting agency to be necessary to protect human health and the environment, the HSWA Permit and RCRA Permit may be amended or reissued as necessary during the period of deferral to include the requirements that shall take effect upon completion of Corrective Action under the Consent Decree. In that case, the permitting agency, after conferring with Morton, shall establish a schedule for such modification or reissuance.

34. Additional Work. If Plaintiffs determine that it is necessary for the protection of human health or the environment that additional investigation, study, or remediation work be conducted at the Moss Point Facility beyond that which has been undertaken during the Site Evaluation, CMS, and CMI, Plaintiffs may direct in writing that Morton perform additional

Work and shall specify the basis for Plaintiffs' determination that additional Work is needed. Subject to Dispute Resolution, Morton shall perform the additional Work requested. The accrual of stipulated penalties for a dispute involving additional Work shall be subject to the accrual provisions in Paragraphs 128 and 144 but shall stop thirty (30) days after submission of the dispute to the District Court. If the Plaintiffs prevail in such dispute, the accrual of stipulated penalties shall resume ten (10) days after the Court's ruling.

35. If Morton declines to undertake some or all of the additional Work, Plaintiffs retain authority to undertake the work or to take any other action authorized under CERCLA, RCRA or any other applicable statute, law or regulation.

36. Work Stoppage. If Plaintiffs determine that any Work undertaken pursuant to this Section has caused or may cause a release to the environment of Hazardous Waste or Hazardous Constituents, or a threat to the public health or the environment, Plaintiffs may order Morton to: 1) immediately stop any specified Work under this Consent Decree for such period of time as may be needed to abate any such release or threat; and 2) undertake any action which EPA determines is necessary to abate such release or threat.

37. Relevant schedules affected by the work stoppage shall be extended by any period during which implementation is stopped by order of EPA or MDEQ plus any reasonable demobilization and/or re-mobilization periods, provided that the release or threat is not due to noncompliance by Morton with the terms and conditions of this Consent Decree.

B. National Audit

38. Purpose and Scope. Morton shall retain independent third-party auditor or auditors (the Consultant Auditor(s)) to conduct an environmental compliance audit at each of the Audit Facilities listed in Attachment F and in accordance with the priorities set forth therein.

The purpose and scope of the Consultant Auditor's activities shall be to identify at each Audit Facility violations of federally-enforceable Environmental Requirements committed since January 6, 1995 (with the exception of any violations of the toxic chemical release program under EPCRA § 313, 42 U.S.C. § 11023, because Morton is participating in EPA's National Nitrate Compliance Agreement), and, to the extent consistent with EPA's Multimedia Investigation Manual (March 1992), to determine if facility activities have created environmental harm. Morton shall direct the Consultant Auditor to follow the provisions set forth in this Section of the Consent Decree and in Attachments F and G. Morton shall not, in any way, through its own actions or through the actions of others, interfere with the ability of the Consultant Auditor to carry out the audits independently in accordance with the provisions set forth in Attachments F and G and this Consent Decree.

39. Selection of the Consultant Auditor(s). Within thirty (30) days of the lodging of this Consent Decree, Morton shall propose to EPA for approval the selection of one or more Consultant Auditors who have at least one employee who meets the qualification requirements of ISO 14012 (First edition, 1996-10-01). The Consultant Auditor shall be paid by Morton in an amount sufficient to carry out the provisions of this Consent Decree related to the National Audit. The Consultant Auditor must not be an employee or former employee of Morton, must not directly own any stock in Morton or in any parent or subsidiary, and must have no direct financial stake in the outcome of the environmental compliance audits conducted under the National Audit provisions of this Consent Decree. The Consultant Auditor must be capable of exercising the same independent judgment and discipline that a certified public accounting firm would be expected to exercise in auditing a publicly-held corporation. If Morton has any other contractual relationship with the Consultant Auditor, Morton shall disclose to EPA such past or

existing contractual relationships. EPA shall notify Morton in writing of its approval or disapproval within 30 days of receipt of Morton's proposal for a Consultant Auditor.

40. If EPA determines that the proposed Consultant Auditor does not meet the qualifications set forth in the previous Paragraph or that past or existing relationships with the Consultant Auditor would affect the Consultant Auditor's ability to exercise the independent judgment and discipline required to conduct the National Audit, such Consultant Auditor shall be disapproved and another Consultant Auditor shall be proposed by Morton for approval by EPA within thirty (30) days of the receipt of EPA's determination. If, at any time, Morton wishes to contract a new Consultant Auditor because the approved Consultant Auditor is unable to fulfill the remaining tasks under the National Audit provisions or for another reason, Morton shall notify EPA in writing and provide an explanation for the change, and shall propose another Consultant Auditor to EPA for approval. Any subsequent Consultant Auditor must satisfy the qualification requirements of Paragraph 39. Any disagreements between Morton and EPA regarding the choice of a Consultant Auditor shall be resolved in accordance with the Dispute Resolution provisions set forth in Section XVIII of this Consent Decree.

41. Morton shall identify all site-specific training requirements for the auditors so they can effectively and safely conduct the required audits and shall ensure that their training is completed before conducting any audit pursuant to this Consent Decree.

42. Morton shall provide a copy of the text of this Consent Decree and Attachments F and G to each Consultant Auditor who is retained to carry out any of the provisions of the National Audit required by this Consent Decree.

43. Conduct of the National Audit. The National Audit shall be conducted by the Consultant Auditor in accordance with the purpose and scope of the National Audit as set forth

in Paragraph 38 and the provisions set forth in this Section of the Consent Decree and Attachments F and G. Changes to the priorities in Attachment F may be made with approval by EPA.

44. Audit Reports. Morton shall direct the Consultant Auditor to develop and submit a draft of an Audit Report to Morton and EPA for each environmental compliance audit conducted at an Audit Facility as required by this Consent Decree within sixty (60) days following the completion of the on-site portion of the audit at that Audit Facility. Each Audit Report shall present the Audit Findings and shall, at a minimum, contain the following information:

- a. Audit scope, including the period of time covered by the audit and each statute against which environmental compliance was determined;
- b. The date(s) the on-site portion of the audit was conducted;
- c. Identification of audit team members;
- d. Identification of the Morton representatives and regulatory agency personnel observing the audit;
- e. The distribution for the Audit Report;
- f. A summary of the audit process, including any obstacles encountered;
- g. Audit Findings and a detailed statement of the basis for the Audit Findings;
- h. Identification and completion dates of Corrective Steps taken during the National Audit; and,
- i. Certification by the Consultant Auditor that the referenced compliance audit was conducted in accordance with Attachment G and the provisions of this Consent Decree.

45. If the Consultant Auditor believes that additional time is needed to analyze available information or to gather additional information, Morton may request that EPA grant the Consultant Auditor such additional time as needed to prepare and submit a draft Audit Report or a final Audit Report. EPA's decision whether to grant additional time shall be final and unreviewable.

46. Within sixty (60) days of the submission of a draft Audit Report, Morton or EPA may submit any comments on such draft to the Consultant Auditor that prepared the draft Audit Report and to each other and may discuss the draft Audit Report with the Consultant Auditor.

47. The Consultant Auditor shall review and consider any such comments submitted by Morton and EPA and shall make such revisions to the draft Audit Report as the Consultant Auditor deems appropriate. Within thirty (30) days of receipt of any comments from Morton or EPA, the Consultant Auditor shall issue a final Audit Report.

48. Action Plan. Upon receiving the final Audit Report for each Audit Facility, Morton shall conduct a root cause analysis of the identified violations and evaluate the identified environmental harm, as appropriate. Within ninety (90) days of receiving the final Audit Report for each Audit Facility, Morton shall develop and submit to EPA for approval an Action Plan for expeditiously bringing the Audit Facility into full compliance with respect to the identified current violations and to mitigate or address the identified environmental harm to the extent obligated by federally-enforceable Environmental Requirements. The Action Plan shall also include a plan for implementing an environmental management system at the Audit Facility in accordance with Attachment H — "Environmental Management System Criteria To Be Met By Morton Chemical Facilities," or a substantially comparable system, unless Morton has already implemented such a system at the Audit Facility. However, failure to implement EMS shall not

subject Morton to the imposition of stipulated penalties. The Action Plan shall include specific deliverables, responsibility assignments, and a compliance schedule, and shall be consistent with any applicable Environmental Requirements. The Action Plan may be accompanied by supporting information and a justification. Nothing in the Action Plan or this Consent Decree shall create a legal obligation to mitigate any identified environmental harm that Morton would not be required to address pursuant to any federally-enforceable Environmental Requirements.

49. EPA shall review the Action Plan and, with written notice to Morton, approve it or identify the deficiencies, which may include insufficient information to evaluate the Action Plan, and explain why the proposed Corrective Steps set forth therein will not correct the noncompliance or adequately correct, mitigate or address the environmental harm to the extent obligated by Environmental Requirements. If not approved, Morton shall revise and resubmit the Action Plan within thirty (30) days following receipt of the written notice identifying and explaining the deficiencies. The resubmitted document shall address each identified deficiency. With written notice to Morton, EPA shall approve the resubmitted document or identify the deficiencies and explain each deficiency as provided above. Should EPA not approve the resubmission, Morton shall have ten (10) days from receipt of the notice of deficiencies to cure the deficiencies that are identified. If EPA concurs that the deficiencies have been cured, EPA shall approve the final submission and notify Morton in writing of same. If EPA determines that not all deficiencies have been cured, it may elect to exercise its rights with respect to all Audit Findings as provided in Paragraph 55, or it may approve the Action Plan with respect to those Audit Findings for which there are no outstanding deficiencies, and address the matters for which there are outstanding deficiencies under Paragraph 55. Morton shall proceed to implement the approved Action Plan.

50. Nothing contained in this Section shall prevent Morton from taking Corrective Steps before approval of the Action Plan to correct violations or adequately correct, mitigate or address environmental harm identified by the Consultant Auditor during the site visit or as Audit Findings. If requested by Morton, EPA shall use best efforts to review and comment on the appropriateness of such Corrective Steps before Morton takes them.

51. If at any time EPA and Morton agree that any item in an Action Plan, or an entire Action Plan for an Audit Facility, is more appropriately addressed under a consent order or other appropriate agreement, EPA and Morton may negotiate and enter into such consent order or other appropriate agreement, in which case such item or Action Plan shall no longer be governed by the provisions of this Consent Decree, except as set forth in the next sentence. The potential penalty reduction for the Audit Findings as provided in Paragraphs 56 through 61 shall continue to be available with respect to the Audit Findings regardless of a decision to address any item on an Action Plan or an entire Action Plan through a Consent Order or other appropriate agreement.

52. If Morton and EPA agree on the Action Plan for an Audit Facility, Morton shall implement the Corrective Steps set forth in the Action Plan within a one year period from the date of written notice of approval, which period may be extended or shortened by agreement between EPA and Morton ("Implementation Period"). Every four months during the Implementation Period, Morton shall submit reports to EPA certifying that it has implemented the Corrective Steps as specified in the Action Plan for the previous four month reporting period ("Certification Reports"). Morton shall submit to EPA the Certification Reports by the last business day of the month after the four month reporting period. If Morton cannot certify implementation of Corrective Steps in accordance with the Action Plan, the Certification Report

shall set forth the reasons why Morton has not done so and shall state the efforts Morton has made toward implementation of such Corrective Steps.

53. Morton shall be subject to stipulated penalties for failure to submit a timely Certification Report and for failure to certify in a submitted Certification Report that it has implemented Corrective Steps related to violations or identified environmental harm that Morton is obligated by federally-enforceable Environmental Requirements to adequately correct, mitigate or address. Morton shall not be subject to stipulated penalties: 1) for failure to certify in a Certification Report completion or implementation of Corrective Steps related to identified environmental harm that there is no obligation to address pursuant to federally-enforceable Environmental Requirements; 2) where it has substantially performed the Corrective Steps; or 3) where it reports in its next Certification Report that it has cured its noncompliance with the Corrective Steps. Any assessment of stipulated penalties pursuant to this Paragraph may be subject to Dispute Resolution.

54. When Morton completes all Corrective Steps set forth in an Action Plan for one or more Audit Facilities, it may submit a Request for Acknowledgement of Partial Completion, in which case the provisions of Paragraph 104 shall apply.

55. Except for stipulated penalties related to the Certification Reports as set forth in Paragraph 53 above, any disagreement between Morton and EPA regarding one or more of the Audit Findings, or the appropriateness of all or a portion of the proposed Action Plan, shall not be subject to Dispute Resolution. In the event a disagreement arises that cannot be resolved in a reasonable time period, EPA retains all authority and reserves all rights to take any and all actions authorized by law to address some or all of the Audit Findings, and Morton reserves all of its defenses. In addition, if at any time, in its sole, unreviewable discretion, EPA determines

that Morton has not made substantially reasonable further progress toward implementation of an Action Plan, EPA may terminate the Implementation Period. In such event, EPA and Morton reserve all of their rights and defenses. EPA and Morton also reserve all of their rights and defenses with regard to any continuing violations not corrected by the end of the Implementation Period. In exercising such rights, if Morton has already paid a penalty under Paragraphs 56 through 61 of this Consent Decree, EPA may seek penalties only for noncompliance beyond the end of the Implementation Period, and such penalties may only be statutory penalties and shall not include stipulated penalties.

56. Civil Penalties Resulting from Audit Findings. If EPA deems a penalty appropriate for a violation discovered through an Audit, after receipt of a final Audit Report by EPA, EPA may present, in writing, a civil penalty demand for the violations identified in the Audit Report. As appropriate under EPA's applicable penalty policies, any proposed penalty calculated by EPA shall include the full economic benefit of the violations for which EPA is seeking penalties and a gravity component. The penalty demand by EPA shall include penalty calculation worksheets, an explanation for any penalty reduction or failure to reduce penalty under Paragraph 57, and any other penalty justification normally provided under the customary practice of the applicable EPA regional office. Civil penalties for violations that might otherwise accrue shall cease to accrue subsequent to the Consultant Auditor's site visit, provided that Morton diligently has pursued or is pursuing Corrective Steps for any violations identified by the Consultant Auditor in accordance with the approved Action Plan.

57. In EPA's sole, unreviewable discretion, the gravity component of any civil penalty demand may include a 75% reduction in the amount established under the applicable civil penalty policy for each violation, unless any of the following aggravating factors are present

with respect to the particular violation: willfulness, lack of good faith efforts to comply; substantial environmental harm; failure to correct a violation or come into compliance; failure to adequately address environmental harm that Morton has a legal obligation to address under Federally-enforceable Environmental Requirements; and repeated instances of serious noncompliance at the Facility. If one or more of these factors are present, a smaller or no reduction may be applied, as EPA deems appropriate in its sole, unreviewable discretion.

58. If Morton disagrees with the amount of EPA's demand for civil penalties, the parties shall meet to discuss the appropriateness of the penalty calculation under the applicable penalty policies, whether the aggravating factors set forth in Paragraph 57 are present, the seriousness of any aggravating factors present, factual or legal defenses that may apply, and any other appropriate matters. If Morton agrees with the amount of EPA's demand, as originally presented or as modified by EPA, Morton and EPA shall memorialize such agreement in a manner they deem appropriate, and Morton shall pay the agreed-upon civil penalty. Payment of the civil penalty and performance of the approved Action Plan shall resolve any civil liability of Morton with regard to matters identified through the National Audit and the Action Plan with regard to such Audit Facility, unless EPA and Morton agree to leave certain items unresolved by the agreement. Assessment of stipulated penalties related to the Certification Reports, as provided in Paragraph 122, shall not affect an agreement reached between Morton and EPA regarding the appropriateness of a civil penalty, including any reduction of the gravity component of the penalty calculation.

59. Any disagreement between Morton and EPA regarding the appropriateness of the civil penalty demanded shall not be subject to Dispute Resolution or stipulated penalties. If any such disagreement cannot be mutually resolved in a reasonable time period, the United States

and EPA retain all authority and reserve all rights to take any and all actions authorized by law to address the Audit Findings, and Morton reserves its defenses.

60. In the event the Parties cannot reach agreement regarding the appropriateness of a civil penalty, the potential 75% gravity-based penalty reduction scheme described herein shall not be binding upon the United States or EPA should either exercise enforcement rights outside the scope of this Consent Decree to address the Audit Findings.

61. Every civil penalty demand associated with violations of Environmental Requirements at a Morton facility that were identified or will be identified through an inspection involving EPA that occurred or occurs after January 6, 2000, and before the Consultant Auditor submits its final Audit Report for such Morton facility shall be subject to the penalty assessment provisions in Paragraphs 56-60 as if such violations were discovered during the National Audit of an Audit Facility.

62. The time between January 6, 2000 and sixty days after the Consultant Auditor has submitted the final Audit Report to Morton and Plaintiffs for an Audit Facility shall not be included in computing the time limited by any statute of limitations under any cause of action that is pursued by the United States as a result of the audit conducted at that Audit Facility, if any statute of limitations is applicable. Nor will that time period be considered on a defense of laches or similar defense concerning timeliness of commencing a civil action by the United States. Morton shall not assert, plead or raise against the United States in any fashion, whether by answer, motion or otherwise, any defense or avoidance based on the running of any statute of limitation, during the aforementioned period, and any statute of limitations shall be tolled during and for that period.

A. VII. SUPPLEMENTAL ENVIRONMENTAL PROJECTS

63. Morton shall implement a Supplemental Environmental Project (“SEP”) for a credit of ten million dollars (\$10,000,000) in accordance with the provisions of Attachment I, hereto, to facilitate pollution prevention or reduction (“Plant SEP”). Morton hereby certifies that, to the best of its knowledge, it is not otherwise required, by virtue of any local, state or federal statute, regulation, order, consent decree, or other law, to perform the specific tasks enumerated in Attachment I to this Consent Decree. Morton further certifies that it has not already received, and is not currently negotiating to receive, credit in any other federal or state action for the Plant SEP specified in Attachment I. Morton shall not use or rely on any emission reductions generated as a result of the Plant SEP undertaken pursuant to this Section in any federal or state emission averaging, banking, trading, or other emission compliance program.

64. Morton further shall implement a SEP, which shall cost four million dollars (\$4 million), designed to directly benefit human health or the environment of the Mississippi Gulf Coast Area, in accordance with Attachment J (“Lateral Service Line Community SEP”). Morton hereby certifies that, to the best of its knowledge, it is not otherwise required, by virtue of any local, state or federal statute, regulation, order, consent decree, or other law, to perform the specific tasks enumerated in Attachment J to this Consent Decree. Morton further certifies that it has not already received, and is not currently negotiating to receive, credit in any other federal or state action for the Lateral Service Line Community SEP specified in Attachment J. Morton shall not use or rely on any emission reductions generated as a result of the Lateral Service Line Community SEP undertaken pursuant to this Section in any federal or state emission averaging, banking, trading, or other emission compliance program.

65. Morton further shall implement a SEP, which shall cost two million dollars (\$2 million), designed to foster the development of new, lower-polluting chemical products, in

accordance with Attachment K (“Green Chemistry Community SEP”). Morton hereby certifies that, to the best of its knowledge, it is not otherwise required, by virtue of any local, state or federal statute, regulation, order, consent decree, or other law, to perform the specific tasks enumerated in Attachment K to this Consent Decree. Morton further certifies that it has not already received, and is not currently negotiating to receive, credit in any other federal or state action for the Green Chemistry Community SEP specified in Attachment K. Morton shall not use or rely on any emission reductions generated as a result of the Green Chemistry Community SEP undertaken pursuant to this Section in any federal or state emission averaging, banking, trading, or other emission compliance program.

66. The schedules for performance of the Plant SEP, the Lateral Service Line Community SEP, and the Green Chemistry Community SEP are set forth in Attachments I, J, and K.

67. Any agreed-upon modification to the SEP schedules shall be in writing, shall be signed by the parties, shall have as its effective date the date on which it is signed by Plaintiffs, after signature by Morton, and shall be incorporated into this Consent Decree without approval of the Court. Any request by Morton for a SEP completion date or submission date modification shall be made in writing. Such requests shall provide justification for the requested modification.

68. Upon completion of each of the SEPs described in this Part, Morton shall submit a SEP Completion Report containing the following information:

- (a) A detailed description of the SEPs as implemented;
- (b) A description of any operating problems encountered and the solutions

thereto;

(c) Itemized costs, documented by copies of purchase orders and receipts or canceled checks or other evidence of expenses such as Morton's project expenditure documents;

(d) Certification that the SEPs have been fully implemented pursuant to the provisions of this Consent Decree; and

(e) A description of the environmental and public health benefits resulting from implementation of each SEP (with a quantification or estimate of the benefits and pollutant reductions, if reasonably feasible).

69. Following receipt of the SEP Completion Report for each SEP, EPA shall within sixty (60) days either: a) accept the SEP Completion Report; or b) reject the SEP Completion Report, notify Morton, in writing, of deficiencies in the SEP or the SEP Completion Report and grant Morton an additional reasonable time in which to correct any deficiencies and submit a revised SEP Completion Report. EPA may reject the SEP Completion Report if the SEP as performed or the SEP Completion Report as drafted did not satisfy the requirements of this Consent Decree. Procedures regarding review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution and disapproval of such submission shall be governed by Paragraph 32.

70. In any dispute before the Court concerning whether a SEP has been satisfactorily completed or whether Morton has made a good faith effort to implement the SEP, Morton shall have the burden of proof and the scope of review with respect to EPA's determination on the matter shall be as set forth in 5 U.S.C. § 706.

71. Any public statement, oral or written, in print, film, or other media, made by Morton making reference to any SEP shall include the following language: "This project was

undertaken in connection with the settlement of an enforcement action taken by the U.S. Environmental Protection Agency and the Mississippi Department of Environmental Quality.”

72. In the event that the Plant SEP commitment of \$10 million is not satisfied, the difference between the SEP commitment of \$10 million and the credit accrued for SEP expenditures under Attachment I and the SEP policy shall be applied as follows: 1) Morton may choose to pay an additional civil penalty to Plaintiffs; or 2) Morton may request that such funds be expended on the Lateral Line SEP or submit an alternative SEP. If the Parties cannot reach agreement on whether the funds should be expended on the Lateral Line SEP or an alternative SEP, Morton shall pay such funds not expended as an additional civil penalty to Plaintiffs.

#### **VIII. COMPLIANCE PLAN AND INTERIM OPERATING CONDITIONS FOR MOSS POINT FACILITY AND ELECTRONIC MATERIALS FACILITY**

73. Compliance Certifications. Within thirty (30) days of entry of this Consent Decree, within the month after each successive two-year period after such entry, and in conjunction with the Certification under Section XIV of completion of Work at the Moss Point Facility under this Section, Morton shall submit to Plaintiffs the Certification(s) identified in this Paragraph with respect to the Moss Point Facility. Morton shall also submit the Certifications identified in Paragraph 85 with respect to the Electronic Materials Facility according to the schedule identified in Paragraph 85. Each Certification shall be true and accurate at the time of the Certification. To the extent (1) Paragraph 83 or 85 authorize actions or omissions other than those to which Morton is required to Certify in Paragraphs 73 or 85, (2) a permit, exemption, or other approval has been issued or modified after the date of execution of this Consent Decree, and such issuance or modification authorizes actions or omissions different than those stated in Paragraphs 73 or 85, or (3) if operations change to make a Compliance Certification no longer

applicable, such Compliance Certification shall be modified to be consistent with the authority provided by Paragraphs 83 or 85 by such issuance or modification, or with the change in operations. Certifications submitted pursuant to this Consent Decree are in addition to any certifications required under any Environmental Requirements. The Certifications Morton shall submit with respect to the Moss Point Facility are:

(a) Morton has made and documented a Hazardous Waste determination for each solid waste it generates;

(b) Morton is operating only those Hazardous Waste treatment, disposal, or storage units that are included in the RCRA and UIC permits, or that are exempt from permit requirements, except as provided in Paragraph 83(a)-(b);

(c) Morton is not storing or treating any Hazardous Waste in a RCRA permitted tank other than those with waste codes D002, D003, and D028, except as provided in Paragraph 83(c)-(e) and (g)(2);

(d) The only Hazardous Wastes Morton is land disposing on-site are the Authorized Wastes identified in Paragraph 83(g);

(e) No Hazardous Wastes are being stored on the permitted Hazardous Waste container storage pad in excess of the generator accumulation period under 40 C.F.R. § 262.34, even though the RCRA permit authorizes the accumulation of certain Hazardous Wastes on such pad for longer than that period;

(f) Morton is in compliance with all container accumulation standards at 40 C.F.R. § 262.34 and MHWMR pt. 262 and in the RCRA permit, except as provided in Paragraph 83(d);

(g) Morton is not accepting Hazardous Waste at the Moss Point Facility from off-site facilities for storage, treatment, or disposal, except as may be authorized by Environmental Requirements;

(h) Unless otherwise identified in the Certification, Morton is maintaining all records and logs relating to the operation of the Injection Wells that are required under the SDWA, its implementing regulations, the UIC Permits, and the Consent Agreement and Final Order in Docket No. RCRA-04-2000-14(b) (“CAFO”), which is Attachment L hereto, for operations since the later of July 2000 or the last Compliance Certification date;

(i) Unless otherwise identified in the Certification, Morton is maintaining all records and logs as required under the CAA, its implementing regulations, and applicable CAA permits for operations since the later of July 2000 or the last Compliance Certification date; and

(j) Unless otherwise identified in the Certification, all Morton personnel at the Moss Point Facility are current with respect to their environmental training required after July 2000.

74. Environmental Management Procedures. Within sixty (60) days of entry of this Consent Decree, Morton shall submit to Plaintiffs Environmental Management Procedures (“EMPs”) that address how compliance with the following Environmental Requirements, except as authorized in the Interim Operating Conditions in Paragraph 83, shall be maintained at the Moss Point Facility. Plaintiffs shall review each EMP and, with written notice to Morton, approve it or identify the deficiencies and explain why the EMP will not maintain compliance with the Environmental Requirement. If not approved, the EMP shall be revised and resubmitted to address each identified deficiency within thirty (30) days of receipt of Plaintiffs’ written notice of identifying and explaining the deficiencies. The procedures for review, approval,

identification, and explanation of deficiencies, cure, Dispute Resolution, and disapproval of the resubmitted EMP shall be governed by the procedures and standards set forth in Paragraph 32.

Morton shall update each approved EMP, as necessary, to reflect a change in operations or conditions that materially alters the EMP. The EMPs shall address how:

(a) newly-generated Hazardous Wastes will be timely evaluated, classified, and documented;

(b) except as provided in Paragraph 83(a)-(e) and (g)(2), the RCRA permitted units in the Ecology Center will not store or treat a Hazardous Waste with a waste code other than D002, D003, and D028, and the non-permitted units will not store or treat a Hazardous Waste unless they meet all conditions for a permit exemption under 40 C.F.R. § 264.1(g) and MHWMR pt. 264. This EMP shall include procedures to:

1) train personnel who generate or manage Hazardous Waste as to the authorized wastes for each permitted unit;

2) segregate, contain and collect Hazardous Wastes so that they do not enter units that are not authorized for their receipt;

3) obtain approval from environmental personnel before discharging any non-routine wastestream; and

4) follow conditions for permit exemptions.

(c) the Injection Wells will not receive Hazardous Wastes other than the Authorized Wastes identified in Paragraph 83(g);

(d) manifests and LDR notifications and certifications will be prepared for all Hazardous Wastes that are transported off-site;

(e) containers of Hazardous Wastes will be accumulated only on the permitted Hazardous Waste pad, or in areas designated for less-than 90-day or satellite accumulation, and such accumulation will meet the requirements of 40 C.F.R. § 262.34;

(f) shipments of Hazardous Waste from any off-site location will not be accepted at the Moss Point Facility, except as authorized by Environmental Requirements;

(g) the groundwater recovery system will be maintained in good working order, operators will be trained to maintain it in good working order, and problems associated with operations of the system will be reported;

(h) RCRA inspections will be conducted and the inspection log will be maintained in accordance with 40 C.F.R. § 264.15 and MHWMR pt. 264;

(i) the data recorders for the Injection Wells will be maintained in good working order;

(j) releases into the environment will be evaluated for timely and accurate EPCRA and CERCLA reporting;

(k) discharge monitoring reports and groundwater monitoring reports will be evaluated for accuracy and completeness by two or more persons before submission to EPA or MDEQ; and

(l) the data totalizers and recorders for the NPDES discharge will be maintained in good working order; and

(m) new emission sources will be evaluated for regulatory requirements under the CAA.

75. Within 36 months of entry of this Consent Decree, Morton shall Certify to Plaintiffs that the existing environmental management system in place at the Moss Point Facility

conforms to the environmental management system in accordance with Attachment H, or a substantially comparable system. Failure to so certify shall constitute a violation of the Consent Decree, subject to Paragraph 120. Failure to implement the EMS shall not be deemed a requirement of this Consent Decree and shall not subject Morton to the imposition of stipulated penalties.

76. Termination of Injection Wells. Through the Plant SEP, Morton commits to use its best efforts to develop and implement technically and economically feasible means to end its use of underground injection at the Moss Point Facility. Prior to entry of this Consent Decree, Morton was and currently is authorized to use the Injection Wells. The Parties agree that Morton's commitment as set forth in this Paragraph is beyond all current Environmental Requirements.

77. During the Well Continuation Period, Morton shall be allowed to continue to manage and inject wastewater and recovered groundwater, including but not limited to operation of the Ecology Center and the existing Injection Wells as allowed under its present permits, applicable regulations, and the conditions set forth in this Section, including the Interim Operating Conditions set forth in Paragraph 83. The Well Continuation Period shall end on March 31, 2005 unless extended or shortened as follows: (1) by agreement between Plaintiffs and Morton; or (2) to the date necessary for the Permit Board or EPA, as appropriate under either authority, to take final action on all applications and requests for permits, permit modifications, no migration exemptions, or other agency authorizations in accordance with Attachment I, and for Morton to appeal such final agency action, provided that Morton submits the necessary application, request, or notice of appeal by the time specified herein or, if not

specified, in a timely manner. EPA and MDEQ shall cooperate with Morton in the expeditious review of each permit application and request for other authorizations.

78. Integration of Consent Decree and Permits. For purposes of this Consent Decree, Morton's current RCRA, HSWA, NPDES, CAA, and UIC permits are administratively extended through the Well Continuation Period. The Parties recognize that the provisions of this Consent Decree, including without limitation the Interim Operating Conditions, authorize Morton to operate in some respects differently than under otherwise applicable Environmental Requirements, including its permits. To the extent the terms and conditions of this Consent Decree vary from those in the permits or other applicable Environmental Requirements, the terms and conditions of the Consent Decree shall supersede. The Parties agree that the operations allowed under this Consent Decree that would be subject to permitting under the CAA shall be covered by the Title V permit application shield. Nothing herein shall limit Morton from requesting permits, permit modifications to the administratively-extended permits, or other authorizations to conduct its operations (including additional Interim Operating Conditions), and when approved by EPA or the Permit Board, as appropriate under either authority, the terms and conditions of such permits, permit modifications, and other authorizations requested by Morton shall apply. Paragraph 33 shall also apply with regard to integration of Corrective Action obligations.

79. As soon as practicable, but in any event no later than June 30, 2002, Morton shall submit to Plaintiffs an evaluation of whether ending use of the existing Injection Wells is technically and economically feasible ("Evaluation Report"). "Economically feasible" shall mean capable of being implemented at a cost that allows the Moss Point Facility to continue to

operate at a reasonable rate of return those processes that generate wastewater that otherwise would require injection.

80. Morton may also address in the Evaluation Report whether continuing injection is environmentally preferable to other waste management alternatives evaluated in the Plant SEP. If Morton makes such an assertion, Plaintiffs in their sole discretion shall decide whether continued injection is environmentally preferable to those waste management alternatives.

81. If Morton concludes that a waste management alternative is technically and economically feasible, and Plaintiffs do not conclude under Paragraph 78 that continued injection is environmentally preferable to such alternative, upon written notice by Plaintiffs Morton shall proceed, to the extent allowed by permitting authorities, to end use of the Injection Wells through completion of the Plant SEP. In that event, Morton shall undertake the steps necessary to obtain permits and approvals for the alternative waste management system and to be in compliance with all Environmental Requirements that would apply at the Moss Point Facility at the end of the Well Continuation Period when the Interim Operating Conditions will have terminated, including, in accordance with Attachment I, submission of all necessary permit applications and other requests for authorization under the CWA, the CAA, and other applicable statutes.

82. If Morton determines that ending use of the existing Injection Wells is not technically or economically feasible, if Plaintiffs conclude under Paragraph 80 that continued injection is environmentally preferable, or if necessary permits are not granted for the alternative wastewater management system, upon written notice by Plaintiffs, Morton may proceed as necessary to file a No Migration Petition, request modification or reissuance of the RCRA, HSWA, NPDES, CAA, or UIC permits, or take other appropriate action, including seeking

approval to inject into a deeper formation, to ensure that its operations will be in compliance with applicable Environmental Requirements at the end of the Well Continuation Period. If Morton elects to file applications to renew or modify its RCRA, HSWA, NPDES, CAA, or UIC permits and no migration exemption, it shall file complete applications within the time frames specified in Attachment I. If Morton requests authority to continue injection in the Injection Wells, in addition to satisfying all other criteria under Mississippi law that are required to obtain the necessary permits for such injection, Morton shall demonstrate to the Permit Board that the Plant SEP waste management alternative(s) to injection either is not “economically feasible” as defined in Paragraph 79 or is less protective of human health or the environment than continued injection. Based on this demonstration and satisfaction of all other criteria for issuance of permits for injection wells, the Permit Board shall decide whether to allow continued injection, and under what terms and conditions injection may occur consistent with the Permit Board’s authority. The Permit Board’s finding that the waste management alternative is not “economically feasible” as defined in Paragraph 79 shall be sufficient as the Permit Board’s determination regarding the “feasible and economically practicable” criteria of the Mississippi Wastewater Permit Regulations (WPC-1), Chapter One, Part K.6. In the event that Morton continues to rely on the existing Injection Wells, the provisions in Section VII (SEPs) regarding SEP credit shall apply.

83. Interim Operating Conditions. The following Interim Operating Conditions shall apply at the Moss Point Facility and supersede any conflicting Environmental Requirement through the Well Continuation Period, or other period if so specified in this Paragraph:

- (a) Morton may operate the Pug Mill, Byrd Centrifuge, and Weigh Tank in the Ecology Center for purposes of storage or treatment of D002, D003,

and D028 Hazardous Wastes and the Hazardous Wastes authorized under Paragraph 83(c) – (e) and (g)(2) without a RCRA permit authorizing such operation, provided such units meet the 40 C.F.R. Part 265 Subpart J and MHWMR pt. 265 standards that would apply to interim status Hazardous Waste tanks, except for secondary containment as authorized in Paragraph 83(b).

(b) Except with respect to the Lab sump, until nine (9) months after written notice from Plaintiffs is delivered to Morton pursuant to Paragraph 82, or until the end of the Well Continuation Period if written notice is provided under Paragraph 81, Morton may:

(1) operate the 107, 109-111, 113, 114, 235, 676, 687, 689, 690 tanks, the Pug Mill, Byrd Centrifuge and Weigh Tank in the Ecology Center, the Waste Stream Separation Centrifuge, and the Formal Wash, Chloro, and S-1 sumps without the secondary containment upgrades as would otherwise be required under 40 C.F.R.

§ 264.193 and § 265.193 and MHWMR pt. 264 and pt. 265;

(2) operate the ancillary equipment associated with the following units without the secondary containment upgrades that would otherwise be required by such regulations: tanks #107, 109, 110, 113, 235, 684, 686, 687, and the Formal Wash and Chloro sumps;

(3) operate the Chloro sump without the Subpart CC air emission controls that would otherwise be required under 40 C.F.R.

Part 265, and all other units that are subject to Subpart CC may

comply with applicable air emission control requirements by meeting the interim status regulations at 40 C.F.R. Part 265, Subpart CC instead of the 40 C.F.R. Part 264, Subpart CC requirements that would otherwise be incorporated in the HSWA permit; and

(4) Morton may operate the Lab sump until May 31, 2001, without meeting the otherwise applicable air emission requirements at 40 C.F.R. Part 265, Subpart CC, or the otherwise applicable secondary containment upgrade requirements at 40 C.F.R. § 265.193 and MHWMR pt. 265, and the ancillary equipment on the Lab sump may be operated throughout the time specified in Paragraph [83(b)(2)] without meeting the otherwise applicable secondary containment upgrade requirements at 40 C.F.R. § 265.193;

- (c) Morton may store and treat in the Ecology Center D035 hazardous wastewater generated by and conveyed from the Electronic Materials Facility to the Moss Point Facility, and Morton may inject such wastewater into the Injection Wells if the wastewater no longer exhibits the D035 toxicity characteristic at the point of injection;
- (d) In accordance with the requirements of Mississippi Commission on Environmental Quality Order No. 4136 00, which is Attachment M hereto, Morton may store and treat in the Ecology Center and inject in the Injection Wells Hazardous Waste recovered groundwater, and, if approved

by MDEQ, leachate generated from the closed RCRA landfill, and Morton may store and treat in roll-offs and the Ecology Center sludge derived from the recovered groundwater;

- (e) Morton may manage in the permitted units in the Ecology Center and dispose in the Injection Wells Hazardous Wastes that result from an upset or a release at the Moss Point Facility or EMF that cannot otherwise be separated and collected from the normal manufacturing waste stream using customary best management practices. Morton shall submit reports regarding such upsets and releases in accordance with Paragraph 49 of the CAFO.
- (f) Morton may store containers of Hazardous Wastes, regardless of their waste code, on the permitted Hazardous Waste storage pad, provided such storage complies with the less-than 90-day storage requirements of 40 C.F.R. § 262.34(a)(1)(i) and MHWMR pt. 262;
- (g) Morton may operate the Injection Wells as follows:
  - (1) Morton may inject all nonhazardous process wastes from the Moss Point Facility, EMF, and the Energy Recovery Facility, D003 Hazardous Waste from the polysulfide rubber process and monomer scrubber, D028 Hazardous Waste from the Formal process, and the Hazardous Wastes identified in Paragraph 83(d)-(e), all of which shall be collectively referred to as the “Authorized Wastes;”

- (2) In anticipation of process changes during implementation of the Plant SEP or the need to manage additional Hazardous Wastes resulting from investigation or remediation, Plaintiffs may approve other wastes for storage and treatment in the Ecology Center and for injection in the Injection Wells, and such wastes, once approved, shall become "Authorized Wastes" for purposes of this Consent Decree;
- (3) The annulus fluid and pressure requirements set forth in Part I(B)(3) of UIC Permit MSI 1006 for Injection Well # 3-Sidetrack shall apply to Injection Well # 1 in lieu of Part I(B)(3) of UIC Permit No. MSI 1005, except that there shall be no upper limit on the differential pressure prescribed in Part I(B)(3)(b) and the differential pressure limitation shall not apply for the first thirty (30) minutes during startup, shutdown and maintenance operations provided a positive differential pressure is maintained at all times;
- (4) The requirements in Part I(C)(4) of UIC Permits Nos. MSI 1005 and MSI 1006 for sampling and analysis of process water wells shall apply only to wells that are operating, and the requirements to measure the water level and evacuate the well shall not apply to a well during operations;
- (5) Morton may add conditioning or treatment agents to improve, maintain, or evaluate injection well operations, but such agents

shall not include Hazardous Waste solvents including spent or recycled solvents; and

(6) The terms and conditions set forth in Paragraph 83(g), above, and the terms and conditions set forth in Paragraphs 27 and 31-51 of the CAFO shall apply to the Injection Wells notwithstanding any requirements to the contrary in the UIC permits or otherwise, except that:

(A) for purposes of the Consent Decree, all provisions of the CAFO pertaining to Exempted Wastes shall apply to Authorized Wastes as defined herein;

(B) the 500 gpm limit in Paragraph 39 of the CAFO may be modified if Morton supports the modification through a modeling demonstration and Plaintiffs approve a different volumetric rate of injection; and

(C) with the approval of Plaintiffs, the quarterly monitoring requirements for Appendix VIII constituents in Paragraph 47 of the CAFO may be discontinued or limited to those chemicals that are expected to be detected above background levels based on prior quarterly sampling results;

(h) Morton may continue to discharge the backwash from boiler water conditioning pending modification of NPDES Permit #MS 0001775 to clarify this matter.

- (i) Unless the permit modification request is denied, Morton may discharge stormwater runoff from the Moss Point Facility and Electronic Materials Facility that runs into the stormwater trench along the north edge of the facilities, that then connects with a trench along the west edge of the railroad tracks, and that finally discharges into the Escatawpa River, provided no later than ninety (90) days after the entry of this Consent Decree, Morton submits to MDEQ an application for modification of its NPDES permit to cover such discharges;
- (j) Morton may continue to operate tanks in the following areas notwithstanding the secondary containment requirements under Part II.B.14 of the NPDES Permit #MS 0001775, provided Morton installs or upgrades the secondary containment required under such Part no later than the schedule set forth below, and provided Morton submits to Plaintiffs a Certification within thirty (30) days of the end of each Construction End Date below that such Work was completed by such Construction End Date:

**PHASE 1 Construction End Date — May 31, 2001**

AREA

- 002 Formal Tank Farm
- 003 Chloro Area
- 004 Butadiene
- 007 Tank T-31 at HC
- 013 Ethylene Dichloride
- 014 Acetone Area
- 023 Adhesive Tank Farm
- 027 LP Storage
- 028 T-235 Tank Farm
- 029

- a. Lab Area

2. PHASE 2 Construction End Date —  
May 31, 2002

AREA

001 North Polymer Area (Part A)  
008 Ethylene Oxide Storage  
009 South Polymer Area  
010 ETO Scrubber Area  
016 NaSH Production Unit  
017 NaSH Hydrogen Sulfide Storage  
024 Urethane Tank Farm  
025 Toluene Tank Farm  
026 Crudes Area

3. PHASE 3 Construction End Date —  
December 31, 2002

AREA

001 North Polymer Area (Part B)  
005 Ecology Waste Treatment  
006 Hydrocarbon Building  
011 HC Reactor Area  
012 Tanks T-109 and T-110  
015 Wastewater Stream Separation  
018 Monomer West Tank Farm  
019 Monomer Productions Area  
020 Monomer FF-55 Area  
021 Monomer SE Tank Farm  
022 Monomer East Tank Farm; and

- (k) The sulfur dioxide emissions from the sodium bisulfite plant may be less than or equal to 500 ppm pending approval of this limit in the Moss Point Facility's requested permit modification.

84. Completion of Work. Unless otherwise agreed by the Parties, all requirements in this Section with respect to the Moss Point Facility shall cease when Morton certifies and Plaintiffs approve the Certification that the Well Continuation Period has ended, and the Moss Point Facility: (1) is not relying on the Interim Operating Conditions to achieve compliance;

(2) has submitted the required EMPs and Plaintiffs have approved them; and (3) submits the final Compliance Certifications required in Paragraph 73.

85. Electronic Materials Facility Compliance Plan. With respect to the Electronic Materials Facility:

(a) Morton shall identify and implement a process for managing its hazardous wastewater in a manner that does not involve conveyance to the Moss Point Facility for disposal in its Injection Wells. Such conveyance and injection shall cease by December 31, 2001, except it may continue through the Well Continuation Period as an Interim Operating Condition if Morton demonstrates and Plaintiffs agree that cessation by December 31, 2001, is not technically or economically feasible.

(b) The following Interim Operating Conditions shall apply at the Electronic Materials Facility and supersede any conflicting Environmental Requirement until December 31, 2001, or through the Well Operating Period, if approved by Plaintiffs in accordance with the previous Paragraph:

(1) the Electronic Materials Facility may convey its D035 hazardous wastewater to the Moss Point Facility for storage and treatment in the Ecology Center, and, if the waste ceases to exhibit the D035 Hazardous Waste characteristic, it may be disposed of in the Injection Wells;

(2) the Electronic Materials Facility may manage its hazardous wastewater in the Main Sump without the secondary containment otherwise required under 40 C.F.R. § 265.193 and MHWMR

pt. 265, manage hazardous wastewater in the ancillary equipment

associated with the Main Sump, OCR Back Sump, and OCR Front Sump without the secondary containment controls otherwise required by 40 C.F.R. § 265.193 and MHWMR pt. 265, and manage these three sumps without the air emission controls otherwise required under 40 C.F.R. Part 265, Subpart CC and MHWMR pt. 265;

- (3) the Electronic Materials Facility may convey hazardous wastes to the Moss Point Facility that result from an upset or release that cannot otherwise be separated and collected from the normal manufacturing wastestream using customary best management practices; and
- (4) Morton may continue to discharge the backwash from boilerwater conditioning pending modification of NPDES Permit #MS0001775 to clarify this matter.

(c) Within thirty (30) days of entry of this Consent Order, and in conjunction with the Certification under Section XIV of Completion of Work under this Paragraph, Morton shall submit to Plaintiffs Compliance Certifications with respect to the Electronic Materials Facility that, at the time of Certification:

- (1) Morton has made and documented a Hazardous Waste determination for each solid waste it generates;
- (2) Morton is not land disposing on-site any Hazardous Wastes other than the Authorized Wastes identified in Paragraph 83(g);

(3) Morton is in compliance with all container accumulation standards at 40 C.F.R. § 262.34 and MHWMR pt. 262; and

(4) All Morton personnel at the Electronic Materials Facility are current with respect to their environmental training required after July 2000.

(d) Within sixty (60) days of entry of this Consent Decree, Morton shall submit to Plaintiffs Environmental Management Procedures (“EMPs”) that address how compliance with the following Environmental Requirements, except as authorized under the Interim Operating Conditions in this Paragraph, will be maintained at the Electronic Materials Facility. All procedures relating to the review, approval, identification and explanation of deficiencies, resubmission, cure, Dispute Resolution, disapproval and update of EMPs shall be as specified and referenced in Paragraph 74. The EMPs shall address how:

(1) newly-generated Hazardous Waste will be timely evaluated, classified, and documented;

(2) manifest and LDR notifications and certifications will be prepared for all Hazardous Waste that are transported off-site;

(3) containers of Hazardous Waste will be accumulated in areas designated for less-than 90-day or satellite accumulation, and such accumulation will meet the requirements of 40 C.F.R. § 262.34; and

(4) timely and accurate reports will be made to the Moss Point Facility regarding a release or upset of a hazardous waste, other than D035, that is conveyed to the Moss Point Facility.

(e) Unless otherwise agreed to by Morton and Plaintiffs, all requirements in this Consent Decree with respect to the Electronic Materials Facility shall cease when Morton certifies and Plaintiffs approve the Certification that the Electronic Materials Facility: (1) is not conveying hazardous wastewater to the Moss Point Facility for injection, unless such conveyance beyond December 31, 2001, is authorized by Plaintiffs; (2) is not relying on the Interim Operating Conditions to achieve compliance; (3) has submitted the required EMPs and Plaintiffs have approved them; and (4) submits the final Compliance Certifications required in this Paragraph.

#### **IX. SITE ACCESS**

86. The requirements of this Section apply to the Moss Point Facility and the Audit Facilities. Commencing upon the date of lodging of this Consent Decree, Morton agrees to provide the Plaintiffs, including their agencies, employees, and authorized agents (including contractors and subcontractors), access at all reasonable times to the Moss Point Facility and the Audit Facilities, and any other property owned or controlled by Morton or accessible to Morton by contract, to which access is required for the implementation of this Consent Decree, for the purposes of conducting any activity related to this Consent Decree including, but not limited to:

- (a) Monitoring the Work and compliance with all environmental statutes and regulations;
- (b) Verifying any data or information submitted to the Plaintiffs;
- (c) Conducting investigations relating to the Work and Morton's activities at the Moss Point Facility and the Audit Facilities;
- (d) Obtaining samples relating to the Work and activities conducted at the Moss Point Facility and the Audit Facilities;

(e) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Morton or its agents related to the facility or the Work; and

(f) Assessing Morton's compliance with this Consent Decree.

87. The activities authorized by this Section include:

(a) Interviewing and obtaining oral, written, or recorded statements from personnel involved in activities at the Moss Point Facility and the Audit Facilities or pertaining to the Work required by this Consent Decree, whether such personnel are employed by Morton or by its contractors or subcontractors;

(b) Inspecting, reviewing, and copying all documents that relate to activities at the Moss Point Facility and the Audit Facilities or pertaining to the Work required by this Consent Decree;

(c) Observing, photographing, or otherwise documenting the performance or completion of activities at the Moss Point Facility and the Audit Facilities or the Work required by this Consent Decree; and

(d) Conducting such other monitoring and investigative activities as the Plaintiffs deem necessary to monitor activities pertaining to the Moss Point Facility and the Audit Facilities or to the Work required by this Consent Decree.

88. At the time of entering the Moss Point Facility or an Audit Facility, the Plaintiffs and their representatives shall present valid credentials or other official authorization. Morton shall have the right to accompany the Plaintiffs or their representatives throughout their presence at the Moss Point Facility or an Audit Facility, to be present and represent employees during any interviews conducted by Plaintiffs, and to monitor and record the investigative activities

conducted by the Plaintiffs, so long as such monitoring, recording or representation does not delay or impede the investigative activities of the Plaintiffs. If a recording of Plaintiffs' investigatory activities is made by the Plaintiffs or Morton, a copy of the recording shall be provided to the other participants.

89. Morton, upon request at the time of sampling, shall be provided with splits of any samples taken by the Plaintiffs or their representatives, and with copies of the results of sampling, analysis, tests, or other raw data generated as a result of activities authorized under this Consent Decree.

90. Notwithstanding the foregoing Paragraph or any other provision of this Consent Decree, the Plaintiffs retain all of their information gathering and inspection authorities and rights, including enforcement actions related thereto, under all Environmental Requirements.

#### **X. CERTIFICATIONS**

91. Whenever this Consent Decree, including Attachments, requires Morton to Certify a plan, Work plan, design, study, report, other document, or a statement regarding compliance, it shall be signed and certified as accurate by the plant manager or a responsible corporate officer. This Certification shall include the following language:

I certify under penalty of law that this document and any attachments to it 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.

#### **XI. NOTICES**

92. Whenever under the terms of this Consent Decree notice is required to be given or a report or other document is required to be forwarded by one party to another, it shall be directed to the individuals and addresses specified in Paragraphs 93 through 96, unless otherwise specified by this Consent Decree. Any correspondence submitted to the Plaintiffs shall include a reference to the case caption and index number of this Court action. Any changes in the person designated to send or receive such notice or in the address to which the notice is to be sent shall be provided to the other Parties, in writing.

93. Any technical reports or data required to be submitted under this Consent Decree related to the Moss Point Facility or EMF shall be submitted to the appropriate EPA representative specified below and to MDEQ:

**As to the United States:**

Chief  
RCRA Enforcement & Compliance Branch  
Waste Management Division  
U.S. Environmental Protection Agency  
Region 4  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303  
[two copies]

Chief  
RCRA Programs Branch  
Waste Management Division  
U.S. Environmental Protection Agency  
Region 4  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303  
[two copies]

Chief  
Water Programs Enforcement Branch  
Water Management Division  
U.S. Environmental Protection Agency  
Region 4  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303  
[two copies]

Chief  
Air and EPCRA Enforcement Branch  
Air Pesticides and Toxics Management Division  
U.S. Environmental Protection Agency  
Region 4  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303  
[two copies]

As to the State of Mississippi:

Chief  
Environmental Compliance and Enforcement Division  
Office of Pollution Control  
Mississippi Department of Environmental Quality  
P.O. Box 20305  
Jackson, Mississippi 39289-1305  
[two copies]

As to Morton:

Robert A. Lonergan, Esq.  
Vice President and General Counsel  
Rohm and Haas Company  
100 Independence Mall West  
Philadelphia, Pennsylvania 19106-2399

Moss Point Facility:  
Plant Manager  
Morton International, Inc.  
5724 Elder Ferry Road  
Moss Point, Mississippi 39563

or EMF:  
Plant Manager  
Shiple Company LLC  
5712 Elder Ferry Road  
Moss Point, Mississippi 39563.

94. Any technical reports or data required to be submitted under this Consent Decree related to the National Audit shall be submitted to:

Director  
Multimedia Enforcement Division (2248A)  
U.S. Environmental Protection Agency  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460

As to Morton:

Robert A. Lonergan, Esq.  
Vice President and General Counsel  
Rohm and Haas Company  
100 Independence Mall West  
Philadelphia, Pennsylvania 19106-2399

and

The appropriate Facility Contact (See Attachment G).

95. Any other notifications or submissions related to the National Audit shall be sent both to the persons named in Paragraph 94 and the parties named below, who are hereby designated to communicate informally about problems incurred or anticipated in meeting the requirements of this Consent Decree and its Attachments related to the National Audit.

As to the United States:

Chief  
Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
1425 N.Y. Avenue, N.W.  
Washington, D.C. 20005, or  
P.O. Box 7611  
Washington, D.C. 20044-7611.

96. Any other notifications or submissions related to the Moss Point Facility or EMF shall be sent both to the persons named in Paragraph 93 and to the parties named below:

As to the United States:

Chief  
Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
1425 New York Avenue, N.W.  
Washington, D.C. 20005

Regional Counsel  
Office of Regional Counsel  
U.S. Environmental Protection Agency  
Region 4  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303

As to the State of Mississippi:

General Counsel  
Mississippi Department of Environmental Quality  
P.O. Box 20305  
Jackson, Mississippi 39289-1305.

**XII. ENFORCEABILITY OF APPROVED SUBMISSIONS**

97. All deadlines for a submission or performance, including deadlines contained in Morton's approved submissions, shall be enforceable under this Consent Decree and as specified in this Consent Decree.

**XIII. EMERGENCY RESPONSE**

98. In the event of any action or occurrence at the Moss Point Facility, including during the performance of the Work that causes or threatens a release of Hazardous Waste or Hazardous Constituents from the Site that constitutes an emergency situation, or that may present an immediate threat to public health or welfare or the environment, Morton shall, in addition to

complying with any applicable notice requirement specified by law or regulation, provide notification orally or otherwise within seven (7) days to the Director of the Waste Management Division, EPA, Region 4, the Chief of the Environmental Compliance and Enforcement Division, Office of Pollution Control, MDEQ, and the EPA and MDEQ Project Coordinators, and shall notify the Plaintiffs in writing within fifteen (15) days, summarizing the nature, immediacy, and magnitude of the actual or potential threats to human health or the environment. The written notice requirement may be satisfied by sending to the addresses specified in Section XI (Notices) of this Decree a copy of any notice that includes the required information and that is generated pursuant to a requirement of CERCLA or EPCRA, or pursuant to a state statute, together with a cover letter specifying that the notice is being provided pursuant to this Consent Decree, and including the docket number of this case.

99. If the action or occurrence is at the Moss Point Facility, Morton shall, within ten (10) working days, submit to the Plaintiffs (with a copy addressed to the EPA and MDEQ Project Coordinators), for their approval, a plan to mitigate the threat or emergency condition in accordance with all applicable laws and regulations and consistent with Attachment E. The Plaintiffs will approve or modify this plan, and Morton shall implement this plan as approved or modified by the Plaintiffs. If the Plaintiffs determine that quicker action is required, then the Director of the Waste Management Division for Region 4 may orally require Morton to act prior to Morton's making any written submission to the Plaintiffs. Morton may act without prior approval from the Plaintiffs; any such unapproved action shall be taken at Morton's own risk, and Morton shall be responsible for any different or additional action subsequently required by the Plaintiffs to mitigate the threat(s).

100. If the Plaintiffs determine that activities in compliance or non-compliance with this Consent Decree have caused or may cause a release of a Hazardous Waste or Hazardous Constituent, or may pose a threat to human health or the environment, Plaintiffs may direct Morton in writing (except in an emergency, in which case such notification may be oral and followed by written notification), to stop further implementation of this Consent Decree, or a portion of this Consent Decree, for such period of time as may be needed to abate any such release or threat or to undertake any action that the Plaintiffs determine to be necessary. Stipulated penalties may accrue as a result of the Plaintiffs' direction that Morton stop further implementation of this Consent Decree, or a portion of this Consent Decree, only in the event that the release or threat is the result of activities not in compliance with this Consent Decree.

#### **XIV. COMPLETION OF THE WORK**

101. Within ninety (90) days after Morton concludes that all of the Work required under Sections VI(A) (3013 Order/Corrective Action), VI(B) (National Audit), VII (SEPs), VIII (Compliance Plan) Paragraphs 73-84 for the Moss Point Facility, or Section VIII Paragraph 85 for EMF of this Consent Decree has been fully performed, Morton shall submit one or more written reports, Certifying that the Work required under the particular Section has been completed in full satisfaction of the Section's requirements. These reports shall indicate the case name and civil action number, and shall contain the following statement, signed by a responsible corporate official of Morton:

To the best of my knowledge, after thorough investigation in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted, I certify, based on my inquiry of the person or persons who

manage the system, or those persons directly responsible for gathering the information, that Morton has completed the work required by Section \_\_\_\_ (Paragraph(s) \_\_\_\_\_, as applicable) in accordance with the Consent Decree, and that the information contained in or accompanying this submission is 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.

102. If after review of the final written reports and Certifications, and any inspection, Plaintiffs determine that any portion of the certified Work has not been completed in accordance with this Consent Decree, Plaintiffs shall notify Morton in writing within sixty (60) days of receipt of the Certification of the activities that must be undertaken to complete this portion of the Work. Within thirty (30) days of receipt of this notification, Morton shall submit a plan to Plaintiffs for completion of the work. If Plaintiffs disapprove the plan, Morton shall resubmit the plan within thirty (30) calendar days following receipt of the disapproval and accompanying comments. The resubmitted plan shall address and satisfy Plaintiffs' comments. Plaintiffs shall approve the resubmitted plan or disapprove the resubmitted plan and explain the basis for such disapproval. Should Plaintiffs disapprove the plan, Morton shall have ten (10) days from receipt of disapproval either to address the deficiencies explained in the disapproval or to invoke Dispute Resolution. Upon completion of the activities required by the plan, Morton shall submit revised written reports and Certifications for the completed portion of the Work.

103. If after review of the final written reports and Certifications, and any inspection, Plaintiffs determine that the certified Work has been completed in accordance with the Consent

Decree, Plaintiffs shall notify Morton in writing within sixty (60) days of receipt of the Certification, which notice shall constitute the Acknowledgement of Partial Completion and shall relieve Morton of the requirements of the Consent Decree with respect to that Section (and Paragraphs, as applicable) that had been certified as complete.

104. At its option, Morton may also submit a Request for Acknowledgement of Partial Completion for one or several facilities by demonstrating that all of the Work required under this Consent Decree with respect to that one or several facilities has been fully performed. The procedures for submitting such a request and for its review, approval or disapproval shall be the same as set forth in Paragraphs 101, 102, and 103 for a Request for Acknowledgement of Partial Completion of a Section of the Work.

#### **XV. ENFORCEMENT COSTS**

105. If Plaintiffs determine that Morton's performance of any Work at the Moss Point Facility remains inadequate or incomplete after the dates for completion established under this Consent Decree, and if Plaintiffs decide to undertake such Work, they shall give Morton notice of their intent to conduct such Work, specifying that portion of the Work Plaintiffs intend to conduct. If Morton does not contest Plaintiffs' decision that Morton's performance of the Work is inadequate or incomplete, or if Plaintiffs' decision is upheld through the Dispute Resolution procedures of Section XVIII Plaintiffs may recover the cost of such Work from Morton and Morton shall reimburse the United States or the State for all costs associated with such Work incurred by or on behalf of the United States or the State in connection with the enforcement of this Consent Decree, including attorneys' fees and costs incurred in connection with hiring contractors and subcontractors to review the Moss Point Facility or and to oversee, monitor, or undertake such Work.

106. Plaintiffs shall send Morton a bill detailing costs to be paid pursuant to this Section, including direct and indirect costs incurred by Plaintiffs and their contractors on a quarterly basis. Morton shall make all payments within thirty (30) days of Morton's receipt of each bill. Payment shall be made by Electronic Funds Transfer ("EFT") to the U.S. Department of Justice lockbox bank at the Office of the United States Attorney for the Southern District of Mississippi, referencing the DOJ Number, 90-7-1-06413, and the U.S.A.O. file number. If payment is due to the State, payment shall be made by certified check made payable to the Mississippi Commission on Environmental Quality and mailed to P.O. Box 20305, Jackson, Mississippi 39289-1305 (Attn: General Counsel), or delivered by hand or mail to the Mississippi Department of Environmental Quality, 2380 Highway 80 West, Jackson, Mississippi (Attn: General Counsel). Notice of the EFT and copies of any correspondence from Morton to the United States Attorney shall be sent to Plaintiffs as provided in Section XI (Notices) of this Decree.

107. Without limiting Morton's rights under Paragraph 105, Morton may contest the obligation to pay any costs invoiced under this Section on the ground that Plaintiffs have made an accounting error or have billed to Morton demonstratively excessive costs or costs not reasonably related to performance of the Work or to the enforcement of this Consent Decree. Such objection shall be made in writing within thirty (30) days of receipt of the bill and must be sent to the United States and State pursuant to Section XI (Notices) of this Decree. Any such objection shall specifically identify the contested costs and the basis for objection.

108. In the event of an objection, Morton shall within the thirty (30) day period pay all uncontested costs to the United States or the State in the manner described in this Section. Simultaneously, Morton shall either establish an interest bearing escrow account in a federally-

insured bank authorized to do business in the State of Mississippi and remit to that escrow account funds equivalent to the amount of the contested costs or agree to pay Interest on the amount of the contested costs. Morton shall send to the United States and the State, as provided in Section XI (Notices), a copy of the transmittal letter and check paying the uncontested costs. In the event of an objection to the payment of any costs under this Section, Morton may initiate Dispute Resolution.

109. If Plaintiffs prevail in the dispute, within five (5) days of the resolution of the dispute, Morton shall pay the sums due (with accrued Interest) to the United States or the State in the manner described in this Section.

110. If Morton prevails concerning any aspect of the contested costs, Morton shall pay that portion of the costs (plus associated accrued Interest) for which it did not prevail to the United States or State in the manner described in this Section.

111. In the event that the payments required by Paragraph 105 are not made within thirty (30) days of Morton's receipt of the bill, Morton shall pay Interest on the unpaid balance. The Interest on the United States' or State's costs shall begin to accrue on the date of Morton's receipt of the bill, and shall continue to accrue at the rate specified through the date of Morton's payment. Such Interest shall be compounded each federal fiscal year. Payment of Interest made under this Paragraph shall be in addition to any stipulated penalties that may accrue pursuant to Section XVII (Stipulated Penalties) by virtue of Morton's failure to make timely payments under this Section.

## **XVI. CIVIL PENALTY**

112. Within ten (10) working days of Morton's receipt of notice of entry of the Consent Decree by the Court, Morton shall pay Twenty Million Dollars (\$20,000,000) to the

United States and the State. One half of the proceeds shall be paid by to the U.S. Department of Justice lockbox bank at the Office of the United States Attorney for the Southern District of Mississippi, referencing the DOJ Number, 90-7-1-06413, and the U.S.A.O. file number. Any EFTs received at the U.S. D.O.J. lockbox bank after 4:00 P.M. (Eastern Time) shall be credited on the next business day. One half of the proceeds shall be paid by certified check and made payable to the Mississippi Commission on Environmental Quality. The check shall be hand delivered to the Executive Director or General Counsel of the Mississippi Department of Environmental Quality at MDEQ's offices at 2380 Highway 80 West, Jackson, Mississippi or the funds shall be transferred by EFT to the deposit account designated as the Pollution Emergency Fund created by Miss. Code Ann. § 49-17-68 and administered by the Commission. Delivery after 4:00 P.M. (Eastern Time) shall be considered a payment made on the next business day. Notice of the EFT and copies of any correspondence from Morton to the United States Attorney and the State shall be sent to the United States and EPA and the State as provided in Section XI (Notices) of this Decree.

113. In the event that the payment required by Paragraph 112 is not made in compliance with the terms of Paragraph 112, Morton shall pay Interest on the unpaid balance. The Interest on the unpaid balance shall begin to accrue on the date of the 11th day following Morton's receipt of notice of the entry of the Consent Decree, and shall continue to accrue at the rate specified through the date of payment. Such Interest shall be compounded each federal fiscal year. Payments of Interest made under this Paragraph shall be in addition to any stipulated penalties that may accrue pursuant to Section XVII (Stipulated Penalties) by virtue of Morton's failure to make timely payments under this Section.

114. Morton may not claim a tax deduction for federal or state tax purposes for any payments made under this Section.

### **XVII. STIPULATED PENALTIES**

115. Morton shall be liable for stipulated penalties for failure to comply with the requirements of this Consent Decree and the attachments thereto as provided in this Section. Stipulated penalties are per violation per day, unless otherwise specified.

116. Stipulated penalties may be imposed for untimely submittals or inadequate performance of requirements of this Consent Decree. Failure to submit a document by a deadline shall be considered to be an untimely submittal not an inadequate performance for purposes of assessing stipulated penalties hereunder, except as provided in Paragraph 121. Inadequate performance shall mean failure to substantially comply by the deadlines for compliance with the requirements of the Consent Decree or its attachments. If Morton disagrees with Plaintiffs' determination that performance of an obligation required under this Consent Decree constitutes inadequate performance and Morton invokes Dispute Resolution to challenge the assessment of a Stipulated Penalty for such alleged inadequate performance, in any such dispute: a) the Court shall give deference to the Plaintiffs' determination that Morton is not in substantial compliance; b) Morton shall have the burden of proof; and c) the standard of review shall be that set forth in 5 U.S.C. § 706.

117. For failure to submit by the time required under this Consent Decree any of the submissions listed in this Paragraph, Plaintiffs may assess the following stipulated penalties against Morton:

**Period of Non-compliance:**

1 - 30 days	31-60 days	over 60 days
\$2,000	\$5,000	\$15,000

- a) Site Evaluation Report
- b) Corrective Measures Study Work Plan
- c) Corrective Measures Study Report
- d) Corrective Measures Implementation Work Plan
- e) Corrective Measures Completion Report
- f) Interim Measures Work Plan
- g) Interim Measures Final Report
- h) Action Plan for each Audit Facility
- i) SEP Completion Report(s)
- j) Environmental Management Procedures
- k) Evaluation Report required by Paragraph 79
- l) Identification of third party auditor(s)
- m) Secondary Containment Certifications

118. For failure to submit by the time required under this Consent Decree or attachment thereto any submission, other than submissions under Paragraphs 117, 121 and 122, Plaintiffs may assess the following stipulated penalty:

<u>Period of Non-compliance</u>			
1-7 days	8-30 days	31-60 days	over 60 days
\$250	\$500	\$2,000	\$5,000

119. For inadequate performance of the obligations set forth below or if the submissions identified in Paragraph 117 above are determined to be inadequate, Plaintiffs may assess the following stipulated penalties against Morton

Period of Non-compliance:

1 - 30 days	31-60 days	over 60 days
\$3,000	\$5,000	\$7,500

- a) Implementation of the Site Evaluation
- b) Implementation of the CMS Work Plan
- c) Implementation of Morton's obligations under the National Audit up to the time Morton submits an Action Plan
- d) Implementation of the SEP in accordance with SEP schedules

120. For inadequate performance of any other requirement of this Consent Decree or if any submission other than those identified in Paragraph 119 or 122 is determined to be inadequate, Plaintiffs may assess the following stipulated penalties against Morton:

Period of Non-Compliance

1 - 7 days	8 - 30 days	31 - 60 days	over 60 days
\$250	\$500	\$2,000	\$5,000

121. Plaintiffs may assess stipulated penalties against Morton regarding Certifications required under Paragraph 73 as follows:

- (a) If the Certification under Paragraph 73 (a-g) is submitted after its deadline because of a failure by Morton to submit timely Certification, stipulated penalties may be assessed under Paragraph 117 for each Certification until the Certification is submitted;

- (b) If a Certification is submitted after its deadline because Morton did not complete the tasks for which it was Certifying by the deadline, except as provided in Paragraph 121(c), stipulated penalties may be assessed under Paragraph 120 for each Certification until the Certification is submitted;
- (c) If a Certification under Paragraph 73 (h-j) is submitted with exceptions, a stipulated penalty of \$1,000 may be assessed for each category of record or log not maintained and for each person not trained, and a stipulated penalty of \$250 may be assessed for each specific record or log not maintained when the category of record or log was maintained. (Such shall be considered continuing and subject to the stipulated penalties in this subparagraph until corrected, unless such record, log, or training cannot be re-created or restored.);
- (d) If a false Certification is submitted, a stipulated penalty of \$27,500 may be assessed for each false Certification. (Such violations shall not be considered continuing violations for the purposes of this Section of the Consent Decree.)

122. Plaintiffs may assess stipulated penalties against Morton in accordance with Paragraph 53 for Certification Reports required under the National Audit at a per day rate of \$500 (1-30 days), \$1,000 (31-60 days), and \$2,500 (over 60 days) for untimely or inadequate performance, or a penalty of \$2,500 for a Certification Report that cannot be submitted because the work that Morton was required to Certify as having been performed cannot be performed or corrected, unless a higher penalty amount is agreed to in the Action Plan. (Such violations for

work that cannot be performed or corrected shall not be considered continuing violations for the purposes of this Section of the Consent Decree.)

123. If Morton violates the provisions in Section IX (Site Access) of this Consent Decree, Plaintiffs may assess the following stipulated penalties against Morton:

Period of Non-compliance:			
1 -7 days	8 - 30 days	31-60 days	over 60 days
\$1,000	\$5,000	\$10,000	\$27,500

124. If, at the Moss Point Facility, Morton stores or treats any Hazardous Waste in a RCRA permitted tank other than those with waste codes D002, D003 and D028, and except as provided in Paragraph 83(c)-(e) and (g)(2), Plaintiffs may assess a stipulated penalty against Morton of \$25,000 per occurrence. (Such violations shall not be considered continuing violations for the purposes of this Section of the Consent Decree.)

125. If, at the Moss Point Facility, Morton injects in the Injection Wells Hazardous Waste other than the Authorized Wastes in Paragraph 83(g), Plaintiffs may assess a stipulated penalty against Morton of \$25,000 per occurrence. (Such violations shall not be considered continuing violations for the purposes of this Section of the Consent Decree.)

126. If Morton fails to comply with the record retention requirements set forth in Section XXII (Record Retention), Plaintiffs may assess a stipulated penalty against Morton of \$2,500 per violation. (Such violations shall not be considered continuing violations for the purposes of this Section of the Consent Decree.)

127. If Morton fails to comply with the notice requirements of Section XII (Emergency Response), Plaintiffs may assess the following stipulated penalties against Morton:

**Period of Non-compliance:**

1 - 30 days	31-60 days	over 60 days
\$1,000	\$2,000	\$5,000

128. All stipulated penalties for continuing violations shall begin to accrue on the day after performance is due or on the day a violation occurs, and continue to accrue through the final day of all corrections of the noncompliance, except as provided below in this Paragraph. Nothing herein shall preclude the simultaneous accrual of separate stipulated penalties. Morton shall notify the Plaintiffs in writing of any failure of Morton to submit or perform by a deadline, for which notice is not otherwise provided, and for which stipulated penalties may be due, within three (3) working days of its knowledge of such failure. Plaintiffs shall notify Morton as soon as practicable of any determination of inadequate performance for which it intends to seek stipulated penalties. The accrual of such penalties shall begin on the day after Plaintiffs' notice, except if Morton knew, or through the exercise of due diligence, reasonably should have known that its performance was inadequate, stipulated penalties shall accrue from the date on which Morton knew or reasonably should have known. Plaintiffs may provide, but shall not be required to provide, notice to Morton for untimely submissions and penalties shall accrue for such violations from the date the submission was due regardless of whether Morton or the United States or the State has notified the other of a violation. Plaintiffs may elect to waive all or a portion of any stipulated penalty that has accrued.

- a) In any dispute over whether Morton has substantially complied with the requirements of the Consent Decree, the accrual of stipulated penalties will stop thirty (30) days after the dispute has been filed with the District Court, unless the Court rules on the

dispute within thirty (30) days of the filing of the dispute. If the Plaintiffs prevail in such dispute, the accrual of stipulated penalties shall resume ten (10) days after the Court's ruling.

- b) In that the Parties do not intend for Morton to be penalized for delays which are attributable to Plaintiffs, when Plaintiffs are required under the Consent Decree to provide a response to Morton, stipulated penalties will stop accruing the day after Plaintiff's response was to have been provided to Morton. The time for which the stipulated penalties will not accrue will be commensurate with the number of days the Plaintiffs' response is late. In the event the Consent Decree does not require Plaintiffs to provide a response within a certain time period, stipulated penalties will stop accruing fourteen (14) days from the date on which Plaintiffs received Morton's submission or other request or requirement for a response. In such event, stipulated penalties will begin to accrue the day after Plaintiffs' response is received by Morton, or as otherwise provided herein.
- c) If Morton can demonstrate that it did not and could not have reasonably known through the exercise of due diligence that its acts or omissions resulted in a continuing violation of a requirement that is subject to per day stipulated penalties under this Section, such penalties shall not accrue beyond thirty (30) days while Morton did not and could not have known through the

exercise of due diligence that it was in violation of the Consent Decree.

129. Morton shall pay a stipulated penalty of \$10,000 if it willfully fails to comply with the requirements under Paragraph 71 regarding public statements related to the SEPs.

130. All penalties owed to the Plaintiffs under this Section shall be due and payable within thirty (30) days of Morton's receipt from the Plaintiffs of a demand for payment of the penalties, unless Morton invokes Dispute Resolution. Stipulated payments for violations of the National Audit provisions shall be paid in full to the United States. Payments of other stipulated penalties shall be paid one-half to the United States and one-half to the Mississippi Commission on Environmental Quality. All payments to the United States under this Section shall be made by Electronic Funds Transfer (EFT) to the U.S. Department of Justice lockbox bank at the Office of the United States Attorney for the Southern District of Mississippi, referencing the DOJ Number, 90-7-1-06413, and the U.S.A.O. file number. Notice of the EFT shall be provided in a letter stating the caption and docket number of this case and addressed to:

Chief, Civil Division  
United States Attorney's Office  
Southern District of Mississippi  
808 Vieux Marche, 2<sup>nd</sup> Floor  
Biloxi, Mississippi 39530

131. If payment is due to the State under this Section, payment shall be made by certified check made payable to the Mississippi Commission on Environmental Quality and mailed to P.O. Box 20305, Jackson, Mississippi 39289-1305 (Attn: General Counsel), or delivered by hand or mail to the Mississippi Department of Environmental Quality, 2380 Highway 80 West, Jackson, Mississippi (Attn: General Counsel). With respect to matters

unrelated to the National Audit, a copy of any correspondence from Morton to the United States Attorney shall be sent to the Plaintiffs as provided in Section XI (Notices).

132. The payment of penalties shall not alter in any way Morton's obligation to complete the performance of the Work required under this Consent Decree or to achieve full compliance with Environmental Requirements as set forth in this Consent Decree.

133. Penalties shall continue to accrue during Dispute Resolution as provided herein, but need not be paid until the following:

(a) If a dispute is resolved through Dispute Resolution, any accrued penalties determined to be owing shall be paid to the United States and State within thirty (30) days of the resolution of such dispute; or

(b) In the event a dispute is before the District Court and the Court's decision is appealed by Morton to the United States Court of Appeals for the Fifth Circuit, Morton shall pay all accrued penalties into an interest-bearing escrow account within thirty (30) days of receipt of the Court's decision or order to the extent the Plaintiffs prevail or as otherwise in accordance with the Court's decision. Penalties shall be paid into this account as they continue to accrue, at least every ninety (90) days. Within thirty (30) days of receipt of the final appellate court decision, the escrow agent shall pay the balance of the account to the Plaintiffs to the extent that they prevail, as determined by the appellate court.

134. If Morton fails to pay stipulated penalties when due, the Plaintiffs may institute proceedings to collect the penalties, as well as Interest. Morton shall pay Interest on the unpaid penalties beginning on the date of demand, and shall continue to accrue at the rate specified through the date of Morton's full payment. Such Interest shall be compounded each federal fiscal year.

135. Nothing in this Section shall be construed as prohibiting, altering, or in any way limiting the ability of the Plaintiffs to seek other remedies or sanctions available by virtue of Morton's violation(s) of this Consent Decree or of the statutes and regulations referenced herein. In the event the Plaintiffs seek penalties for violations for which Morton has paid a stipulated penalty, Morton may ask the Court to consider that amount in determining the amount, if any, of penalty assessed.

136. No payments made under this Section shall be tax deductible for federal or state tax purposes.

#### **VIII. DISPUTE RESOLUTION**

137. This Court shall retain jurisdiction of this matter for the purpose of implementing and enforcing the terms and conditions of this Consent Decree and for the purpose of adjudicating all disputes between the Plaintiffs and Morton that may arise under the provisions of this Consent Decree.

138. Any dispute that arises under or with respect to this Consent Decree shall, in the first instance, be the subject of informal negotiations. The dispute shall be considered to have arisen when one party sends the other party a written notice of dispute. The period for informal negotiations shall conclude upon agreement of the Parties, but shall not exceed fifteen (15) days from the date of the notice of dispute unless such time period is extended by written agreement of the Parties.

139. If the Parties cannot resolve the dispute by the end of the period for informal negotiations, the Plaintiffs, through their officials as designated herein, shall provide their position on the issues in dispute and the reasons therefore in writing to Morton. The designated official for the United States regarding a dispute not related to the National Audit shall be the

appropriate EPA Region 4 division director and the designated official for the State shall be the Executive Director of MDEQ. The designated official for the United States regarding a dispute related to the National Audit shall be the Director of the Multimedia Enforcement Division. The position advanced by Plaintiffs shall be considered binding unless, within ten (10) days after the receipt of Plaintiffs' position, Morton invokes the formal dispute resolution procedures of this Section by serving on the Plaintiffs notice of invocation of formal dispute resolution. Ten (10) days thereafter Morton shall serve on the Plaintiffs a written statement of position on the matter in dispute, including any factual data, analysis, or opinion supporting that position, any supporting documentation relied upon by Morton, and any actions that Morton considers necessary to resolve the dispute.

140. An Administrative Record of the dispute shall be maintained by Plaintiffs. The Administrative Record shall include the statement of position and all of the information provided by Morton pursuant to Paragraph 139, a statement of position and information considered by or relied upon by Plaintiffs, as well as any other documents relied upon by Plaintiffs in making its final decision pursuant to Paragraph 141. Where appropriate, Plaintiffs shall allow submission of supplemental statements of position, data, reports, or declarations.

141. If Plaintiffs concur with the position of Morton, they shall provide written notice to Morton. If Plaintiffs do not concur with the position of Morton, Plaintiffs shall so notify Morton in writing setting forth the basis of its decision. Plaintiffs' decision shall control unless, within fifteen (15) days of receipt of the written determination, Morton files a petition with the Court setting forth a description of the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolve

to ensure orderly implementation of the Consent Decree. Plaintiffs may, within thirty (30) days of the receipt of Morton's petition, file a response with the Court.

142. In any dispute before the Court concerning reports or the adequacy of a submittal or performance by Morton, Morton shall have the burden of proof and the scope of review shall be as set forth in 5 U.S.C. § 706. The Court may grant relief in accordance with applicable principles of law governing review of agency determinations on the administrative record, including but not limited to remanding the dispute for further consideration by the agencies or supplementation of the Administrative Record as appropriate.

143. Notwithstanding the foregoing provisions, if either party wishes to proceed to Court following the informal negotiations period (15 days), it may submit a petition to the Court, provided that it has provided the opposing party fourteen (14) days notice in writing of the intention to submit the matter directly to Court. Such notice shall be accompanied by a statement of position and information considered by or relied upon by the petitioning party.

144. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone or affect in any way any obligation of Morton under this Consent Decree that could be carried out without resolution of the disputed matter, unless Plaintiffs agree or the Court determines otherwise. If Plaintiffs prevail in the dispute before the Court, except for disputes related to Additional Work, applicable stipulated penalties with respect to the disputed matter shall continue to accrue, from the first day of noncompliance with any applicable provision of this Consent Decree that is the subject of the disputed matter, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 133. For disputes related to Additional Work, stipulated penalties will be tolled thirty days after the dispute is submitted to the Court and up to the date the Court rules upon the disputed matter, or as otherwise provided

herein. In the event that Plaintiffs prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XVII (Stipulated Penalties), unless waived in part or in whole by Plaintiffs. Stipulated penalties shall be paid within fifteen (15) days after written demand by Plaintiffs following resolution of the dispute. To the extent that Morton prevails on the disputed issue, stipulated penalties shall be excused.

## II. XIX. FORCE MAJEURE

145. Morton's obligation to comply with the provisions of this Consent Decree shall be deferred to the extent and for the duration that the delay in compliance is caused by a "force majeure" event.

146. "Force majeure," for purposes of this Consent Decree is defined as any event arising from causes beyond the control of Morton or of any entity controlled by Morton, including, but not limited to, its contractors and subcontractors, that delays or prevents the performance of any obligation under this Consent Decree despite Morton's best efforts under the circumstances to fulfill the obligation. The requirement that Morton exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event: 1) as it is occurring; and 2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. Force majeure shall not apply to any delay due to increased costs or Morton's financial inability to carry out the provisions of this Consent Decree, normal precipitation events, or to Morton's failure to make timely and bona fide applications and to exercise diligent effort to obtain permits. It is expressly understood that force majeure events do not include reasonably foreseeable plant upsets, equipment failures, operator errors, and contractor disputes that could be avoided by Morton's best efforts to anticipate or address such events. With regard to the National Audit, and in recognition of the independent role of the

Consultant Auditors, force majeure events include delays caused by the Consultant Auditors as long as those delays are not caused by Morton (including without limitation any failure to cooperate, delays in providing documents requested by the Consultant Auditors, or failure by Morton to provide access to any of its Audit Facilities).

147. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree for which Morton intends to assert a force majeure claim, Morton shall notify Plaintiffs within 48 hours by telephone and shall submit written notification to Plaintiffs within ten (10) working days after the date when it first obtained knowledge that the event might cause a delay. Such written notice shall include the nature, cause and anticipated length of the delay and all steps that Morton has taken and will take, with a schedule for implementation, to avoid or minimize the delay, and Morton's rationale for attributing such delay to a force majeure event. Morton shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Morton from asserting any claim of force majeure for that event. Except with respect to the National Audit, Morton shall be deemed to have notice of any circumstance of which its contractors or subcontractors had or should have had notice.

148. If the Plaintiffs agree that the delay or anticipated delay is attributable to a force majeure event, Plaintiffs shall notify Morton in writing of the length of the extension, if any, for performance of the obligations under this Consent Decree that are affected by the force majeure event. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation except for other obligations following from the event affected by the force majeure. If Plaintiffs do not agree that

the delay or anticipated delay has been or will be caused by a force majeure event, Plaintiffs shall notify Morton in writing of their decision.

149. If Morton elects to invoke Dispute Resolution, it shall do so no later than 15 days after receipt of Plaintiffs' notice. In any such proceeding, Morton shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Morton complied with the requirements of Paragraphs 146 and 147, above. If Morton prevails, the delay at issue shall be deemed not to be a violation by Morton of the affected obligation of this Consent Decree.

#### **XX. INDEMNIFICATION**

150. Neither the United States nor the State assumes any liability by entering into this agreement. Morton shall indemnify, save and hold harmless the Plaintiffs and their officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, acts or omissions of Morton, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Consent Decree. Further, Morton agrees to pay the Plaintiffs all reasonable costs they incur including, but not limited to, reasonable attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States and the State based on acts or omissions of Morton, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Consent Decree. Neither the United States nor the State shall be held out as a party to any contract

entered into by or on behalf of Morton in carrying out activities pursuant to this Consent Decree. Neither Morton nor any such contractor shall be considered an agent of the United States or the State.

151. Morton waives all claims against the United States and the State for damages or reimbursement or for set-off of any payments made or to be made to the United States or the State arising from or on account of any contract, agreement, or arrangement between Morton and any person for performance of Work on or relating to the Moss Point Facility or an Audit Facility, including related to construction delays. In addition, Morton shall indemnify and hold harmless the United States and the State with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Morton and any person for performance of Work on or relating to the Moss Point Facility or an Audit Facility, including but not limited to claims on account of construction delays.

III. XXI. ACCESS TO INFORMATION

152. With respect to the Moss Point Facility, Morton shall provide to the Plaintiffs, upon written request, copies of all non-privileged documents and information within its possession or control or that of its contractors, subcontractors, agents, or lessees, previously not provided to Plaintiffs and which relate to compliance with this Consent Decree, including but not limited to raw data subjected to quality assurance/quality control, test results, memoranda, reports, correspondence, notes, any drafts of the foregoing, or other documents or information related to the Work. Upon written request by the Plaintiffs, or upon oral request during any inspection of the Moss Point Facility conducted by the Plaintiffs, Morton shall also make its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work reasonably available to the Plaintiffs for purposes of investigation and information gathering.

153. With respect to Work at the Moss Point Facility, all data, factual information, and documents obtained by the Plaintiffs from or on behalf of Morton pursuant to this Consent Decree or its Attachments shall be subject to public inspection unless identified as confidential by Morton in conformance with 40 C.F.R. Part 2. Upon request by the Plaintiffs, Morton also shall provide responses to the questions listed at 40 C.F.R. § 2.204(e)(4). Plaintiffs reserve their rights, pursuant to 40 C.F.R. §§ 2.204(a)(2) and (a)(3), to demand that Morton submit these responses in connection with its initial designation of material as confidential. The data, factual information, and documents so identified as confidential shall be disclosed only in accordance with appropriate EPA and DOJ and State regulations. If no claim of confidentiality accompanies documents or information when they are submitted to EPA or the State, or if Plaintiffs have made a final determination in accordance with law that the documents or information are not confidential under the standards of 40 C.F.R. § 2.204(e)(4), and have so notified Morton, as required by law, the public may be given access to such documents or information without further notice to Morton.

154. With respect to the Moss Point Facility and the Audit Facilities, Morton may assert that certain documents, records, and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Morton asserts such a privilege in lieu of providing documents, it shall notify the Plaintiffs that such a claim is being made, and upon request shall provide the Plaintiffs with the following information: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information; and (6) the privilege asserted by Morton. However, no claim of privilege shall be

made with respect to any data (including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data) that are developed pursuant to this Consent Decree or its Attachments.

## **XXII. RECORD RETENTION**

155. In addition to complying with any record-keeping requirements under applicable law and regulations, Morton shall preserve and maintain, for a minimum of three (3) years after issuance of an Acknowledgement of Partial Completion, at least one legible copy of all final plans, reports and submittals required to be generated by Morton under the Section of the Consent Decree for which the Acknowledgement of Partial Completion has been provided, together with documentation, in either electronic or hard copy form, of the research and data used to generate such reports or which otherwise demonstrate the performance of Morton's obligations under such Section. In addition, a copy of the underlying documents, except working drafts, that support or refute such submittal, shall be maintained until one (1) year following Plaintiffs' written approval of each final plan, report and submittal, regardless of any corporate document retention policy to the contrary.

156. With respect to matters not related to the National Audit, notwithstanding the provisions of Paragraph 155, Morton may request in writing permission from Plaintiffs to not preserve, to not maintain, or to destroy certain specified categories of documents. Morton's obligations under Paragraph 155, shall remain unchanged, however, unless and until Plaintiffs issue written approval of the request, which may or may not, in Plaintiffs' discretion, include a waiver of Morton's obligations under Paragraph 155.

157. With respect to all records not related to the National Audit, upon the expiration of any obligation under Paragraph 155, Morton shall provide no less than ninety (90) days notice

to the Plaintiffs that no further preservation or maintenance of records is planned, or that destruction of records is planned, and shall make such records available to Plaintiffs for inspection, copying or retention. This notification shall identify the nature of the records and their storage location or locations.

158. Morton further agrees that within thirty (30) days of retaining or employing any agent, consultant or contractor for the purpose of carrying out the terms of this Consent Decree, Morton shall enter into an agreement, with any such agents, consultants or contractors whereby such agents, consultants or contractors shall be required to provide, upon completion of their work, a copy to Morton for subsequent retention by Morton all documents as described in and consistent with the record retention requirements set forth in Paragraph 155.

### **XXIII. COVENANT OF PLAINTIFFS**

159. In consideration of the Work and Supplemental Environmental Projects that shall be performed and the penalties that shall be paid by Morton under the terms of this Consent Decree, and except as specifically provided in Paragraph 160, the Plaintiffs covenant not to sue or to take administrative action against Morton: for claims alleged in the Complaint, for actions or omissions allowed by the Interim Operating Conditions in Section VIII of this Consent Decree, and for violations of Environmental Requirements that have been corrected to bring the Moss Point Facility or EMF into compliance with Environmental Requirements that are the subject of its Interim Operating Conditions. This covenant not to sue shall take effect upon entry of this Consent Decree.

160. Reservations of rights. Plaintiffs reserve, and this Consent Decree is without prejudice to, all rights against Morton with respect to all matters other than those expressly specified in the covenants not to sue set forth in Paragraph 159, including:

- (1) claims based on a failure by Morton to meet a requirement of this Consent Decree, other than as provided in Section VI(B) (National Audit) of this Consent Decree;
- (2) liability arising under CERCLA;
- (3) liability for damages for injury to, destruction of, or loss of natural resources;
- (4) any criminal liability;
- (5) claims that the Moss Point Facility may pose an imminent and substantial endangerment to health or the environment in accordance with Section 7003 of RCRA, 42 U.S.C. § 6973, the SDWA, 42 U.S.C. § 300I, the CWA, 42 U.S.C. § 1365, the CAA, 42 U.S.C. § 7603, or Miss. Code Ann. §§ 17-17-27(8) (Rev. 1995), 49-17-43 (Rev. 1999);
- (6) violations of an Environmental Requirement that is neither the subject of Section VIII (Compliance Plan) of this Consent Decree nor the Complaint; and
- (7) violations of an Environmental Requirement, as modified by the Interim Operating Conditions, that is the subject of Section VIII (Compliance Plan) of this Consent Decree or the Complaint and that occurs after the deadline for compliance with such Environmental Requirement under Section VIII of this Consent Decree.

Plaintiffs shall exercise such rights in a manner consistent with their authority under this Consent Decree.

161. This covenant is also conditioned upon the veracity of Morton's Certifications and written reports as required in Section XIV (Completion of Work), and on the complete and

satisfactory performance by Morton of its obligations under this Consent Decree. This covenant not to sue extends only to Morton and does not extend to any other person.

#### **XXIV. COVENANT BY MORTON**

162. Morton hereby covenants not to sue and agrees not to assert any claims or causes of action against Plaintiffs with respect to the allegations contained in the Complaint, actions or omissions allowed by the interim operating conditions in Section VIII (Compliance Plan) of this Consent Decree, or violations of Environmental Requirements that have been corrected to bring the Moss Point Facility and EMF into compliance with the interim operating conditions. Morton further agrees not to seek indemnification or reimbursement of the amount of \$20 million referred to in Section XVI (Civil Penalty) or of the \$16 million in SEP funds referred to in Section VII (SEPs) from any agency or department of Plaintiffs. Morton hereby reserves and retains any defense, cause of action, and right not explicitly and specifically waived in this Consent Decree.

#### **XXV. COSTS**

163. Each party shall bear its own costs and attorneys' fees in the action resolved by this Consent Decree.

#### **XXVI. MODIFICATION**

164. Except as specifically provided in the Consent Decree, there shall be no modifications or amendments of this Consent Decree without written agreement of the parties to this Consent Decree and approval by this Court. Such written agreement need not include the State where the modification pertains to the National Audit only. Changes to the technical or schedule provisions of the Work may be made without approval by the Court upon written agreement between Morton and Plaintiffs.

## **XXVII. EFFECTIVE AND TERMINATION DATES**

165. This Consent Decree shall be effective upon the date of its entry by the Court. After Plaintiffs' issuance of Acknowledgments of Partial Completion of all of the Work under Sections VI(A) (3013 Order/Corrective Action), VI(B) (National Audit), VII (SEPs), and VIII (Compliance Plan) of this Consent Decree, except for the requirements of Section XXII (Record Retention), which shall terminate pursuant to the terms of that Section, the Parties may move jointly to terminate this Consent Decree based on their representation that all its requirements have been satisfied, and the Court may order such termination after conducting such inquiry as it deems appropriate.

## **XXVIII. RETENTION OF JURISDICTION**

166. This Court retains jurisdiction over both the subject matter of this Consent Decree and Morton for the duration of the performance of the terms and provisions of this Consent Decree, including its Attachments, for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XVIII (Dispute Resolution).

167. The Parties retain the right to seek to enforce the terms of this Consent Decree and take any action authorized by federal or state law not inconsistent with the terms of this Consent Decree to achieve or maintain compliance with the terms and conditions of this Consent Decree or otherwise.

**XXIX. PUBLIC NOTICE REQUIREMENTS**

168. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) days for public notice and comment in accordance with 28 C.F.R. § 50.7. The Plaintiffs reserve the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations that indicate that the Consent Decree is inappropriate, improper, or inadequate. Morton consents to the entry of this Consent Decree without further notice. The Plaintiffs agree to notify Morton immediately upon their receipt of knowledge that the Court has entered the Consent Decree.

169. If for any reason the Court should decline to approve this Consent Decree in the form presented, then this agreement is voidable at the discretion of either party, and the terms of the Consent Decree may not be used as evidence in any litigation between the Parties.

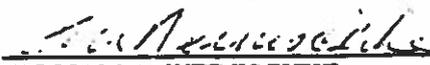
SO ORDERED THIS \_\_\_ DAY OF \_\_\_\_\_, 2000.

\_\_\_\_\_  
United States District Judge

FOR THE UNITED STATES OF AMERICA

Date: 10/22/00

  
\_\_\_\_\_  
**LOIS J. SCHIFFER**  
Assistant Attorney General  
Environment and Natural Resources Division  
U.S. Department of Justice  
Washington, D.C. 20530

  
\_\_\_\_\_  
**WILLIAM A. WEINSCHKE**  
Senior Attorney  
Environmental Enforcement Section  
Environment and Natural Resources Division  
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Washington, D.C. 20044-7611

**BRAD PIGOTT**  
United States Attorney  
Southern District of Mississippi

By: \_\_\_\_\_  
**CROCKETT LINDSEY**  
Assistant United States Attorney

\_\_\_\_\_  
**STEVEN A. HERMAN**  
Assistant Administrator for  
Enforcement & Compliance Assurance  
U.S. Environmental Protection Agency  
401 M Street, SW – Mail Code 2201A  
Washington, DC 20460

FOR THE UNITED STATES OF AMERICA

Date: \_\_\_\_\_

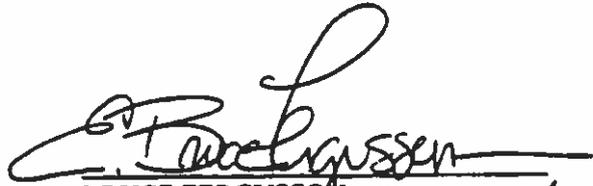
\_\_\_\_\_  
**LOIS J. SCHIFFER**  
Assistant Attorney General  
Environment and Natural Resources Division  
U.S. Department of Justice  
Washington, D.C. 20530

\_\_\_\_\_  
**WILLIAM A. WEINISCHKE**  
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**BRAD PIGOTT**  
United States Attorney  
Southern District of Mississippi

By: \_\_\_\_\_  
**CROCKETT LINDSEY**  
Assistant United States Attorney

  
\_\_\_\_\_  
**STEVEN A. HERMAN**  
Assistant Administrator for  
Enforcement & Compliance Assurance  
U.S. Environmental Protection Agency  
401 M Street, SW -- Mail Code 2201A  
Washington, DC 20460



**BRUCE FERGUSSON** 10/23/00  
Acting Branch Chief  
Industrial Branch  
Water Enforcement Division  
Office of Enforcement and Compliance Assurance  
U.S. Environmental Protection Agency  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460

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**JOHN HANKINSON**  
Regional Administrator  
Region 4  
U.S. Environmental Protection Agency  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303

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**MARY E. GREENE**  
Associate Regional Counsel  
U.S. Environmental Protection Agency  
Atlanta Federal Center, Region 4  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303

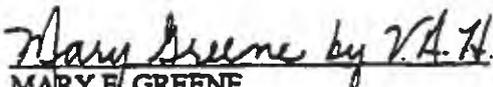
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**BRUCE FERGUSSON**  
Acting Branch Chief  
Industrial Branch  
Water Enforcement Division  
Office of Enforcement and Compliance Assurance  
U.S. Environmental Protection Agency  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460



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**JOHN H. HANKINSON, JR.**  
Regional Administrator  
Region 4  
U.S. Environmental Protection Agency  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303



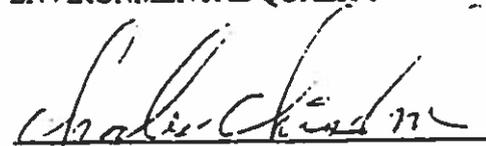
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**MARY E. GREENE**  
Associate Regional Counsel  
U.S. Environmental Protection Agency  
Atlanta Federal Center, Region 4  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303

FOR THE STATE OF MISSISSIPPI

MISSISSIPPI COMMISSION ON  
ENVIRONMENTAL QUALITY

By:



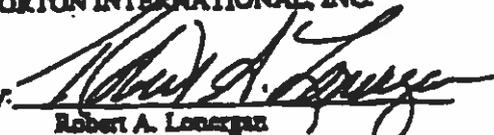
Charles H. Chisolm  
Executive Director  
Mississippi Department of Environmental Quality  
2380 Highway 80 West  
Jackson, Mississippi 39204



Chuck D. Barlow  
General Counsel  
Kelli M. Dowell  
Attorney  
Mississippi Department of Environmental Quality

MORTON INTERNATIONAL, INC.

Date: 10 | 25 | 00

By: 

Robert A. Lonergan  
Vice President and General Counsel  
Rahn and Hass Company  
for Morton International, Inc.

OCT 25 2000 11:45

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

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APR 09 1999

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Gary L. McFarlin  
Plant Manager  
Morton Adhesives and Chemical Specialties Group  
5724 Elder Ferry Road  
Moss Point, Mississippi, 39563-9752

RECEIVED

APR 12 1999

MORTON INTERNATIONAL

SUBJ: Section 3013 Administrative Order  
Morton International, Inc.  
MSD 008 186 587, Docket No. RCRA-4-99-005

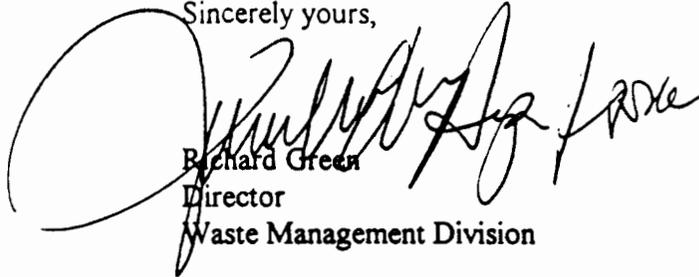
Dear Mr. McFarlin:

Enclosed please find an initial Administrative Order (Order) issued pursuant to Section 3013 of the Resource Conservation and Recovery Act (RCRA), 42 U.S. C. § 6934, which specifies the United States Environmental Protection Agency's (EPA's) authority to investigate potential releases of hazardous wastes or hazardous constituents from the Morton International, Inc., facility located at 5724 Elder Ferry Road, Moss Point, Mississippi. The Order requires Morton International, Inc., to prepare a written proposal for carrying out monitoring, sampling, analysis and reporting which are necessary to ascertain the nature and extent of the hazard posed by hazardous wastes and hazardous waste constituents that may be present at the facility. The Order requires that the proposal be submitted to EPA, within thirty (30) calendar days from the issuance of the Order and that the proposal be implemented once approved by EPA.

At any time prior to the submission of the required proposal you may provide to EPA, in writing or in person, information to show why the facility should not be subject to this Order and whatever additional information you believe is relevant. You may also confer with EPA on the actions required by the Order at any time before or after the written proposal is due. Schedule of such a conference with EPA does not relieve you of the obligation to submit the written proposal described above.

This Order becomes effective on the date it is signed by EPA. If you have any inquiries or wish to schedule a conference with EPA on this matter, please contact Mary Greene, Associate Regional Counsel, at (404) 562-9564.

Sincerely yours,

A large, stylized handwritten signature in black ink, appearing to read 'Richard Green', is written over the typed name and title.

Richard Green  
Director  
Waste Management Division

Enclosures

cc: Chuck Barlow, MDEQ

UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION 4

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APR 9 2 09 PM '99

HEAT

IN THE MATTER OF: ) DOCKET NUMBER: RCRA-4-99-005  
)  
)  
Morton International, Inc. ) PROCEEDING UNDER SECTION  
5724 Elder Ferry Road ) 3013 OF THE RESOURCE  
Moss Point, Mississippi 39563 ) CONSERVATION AND RECOVERY  
) ACT, 42 U.S.C. § 6934  
)  
EPA ID No. MSD 008 186 587. )  
)

ORDER REQUIRING MONITORING, TESTING,  
ANALYSIS AND REPORTING

I. PRELIMINARY STATEMENTS

1. The Director of the Waste Management Division of the United States Environmental Protection Agency, Region 4 (EPA), acting pursuant to the authority vested in the Administrator by Section 3013 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6934, and duly delegated, hereby issues this administrative order.

2. Morton International, Inc. is a company doing business in the State of Mississippi.

3. A determination has been made that the presence and/or release of hazardous wastes, as defined by Section 1004(5) of RCRA, 42 U.S.C. § 6903(5), at Morton International, Inc.'s facility located at 5724 Elder Ferry Road, Moss Point, Jackson County, Mississippi (the Facility), may present a substantial hazard to human health or the environment. Morton International, Inc. (Morton) is hereby ordered to conduct monitoring, testing, analysis and reporting to ascertain the nature and extent of such hazard.

4. This Order is based upon the administrative record compiled by EPA and incorporated herein by reference. The record is available for review by Morton and the public at EPA's regional office at Atlanta Federal Center, 61 Forsyth Street, S.W., Atlanta, Georgia 30303.

II. FINDINGS OF FACT

5. Morton is a "person" as that term is defined in Section 1004(15) of RCRA, 42 U.S.C. § 6903(15), and is the "owner" and "operator" of a "facility" as those terms are defined in 40 CFR § 260.10.

RECEIVED

APR 12 1999

MORTON INTERNATIONAL

6. Operational since 1952, this 431-acre Facility is known as the Morton Adhesives and Chemical Specialties Group and is a "facility" as this term is defined in 40 C.F.R. § 260.10. The Facility uses chemical feedstocks to manufacture polysulfide-based rubber and other chemical raw materials and chemical intermediates.

7. On August 26, 1988, MDEQ issued Morton a Mississippi Hazardous Waste Management Permit, No. HW-88-587-01 (the RCRA base portion of the permit). On February 27, 1990, EPA issued the Hazardous and Solid Waste Amendments (HSWA) portion of the permit, which became effective on April 20, 1990, to include requirements of RCRA as amended by HSWA. Morton's EPA RCRA identification number is MSD 008 186 587.

8. Morton operates its Injection Well pursuant to MDEQ UIC Permit No. MS11005 and its Wastewater Treatment Plant pursuant to MDEQ NPDES Permit No. MS0001775.

9. Morton is permitted to operate a hazardous waste storage/treatment unit, a Hazardous Waste Landfill, a Hazardous Waste Container Storage Area, an Underground Injection Well and a Wastewater Treatment Plant. The only hazardous wastes permitted to be disposed on site, in either the Hazardous Waste Landfill or the Injection Well, are certain D003 (containing D028) wastes as identified in Morton's RCRA and UIC permit applications. No hazardous wastes are permitted to be discharged from the Wastewater Treatment Plant.

10. The RCRA permit includes post-closure care for two RCRA hazardous waste management units that were closed with waste in place. These units are referred to as the V Lagoons and T Lagoon.

11. The Facility routinely uses various commercial chemical products, such as toluene diisocyanate, aniline and xylene which, when disposed, are hazardous wastes. The Facility also routinely uses large quantities of solvents, such as methyl ethyl ketone and toluene, to clean out reactors between batches of various products.

12. The Facility admitted in its May 21, 1998 Response to a RCRA Section 3007 Information Request that prior to October 26, 1996, no hazardous wastes were ever sent off-site for disposal. Accordingly, all hazardous wastes were disposed on-site.

13. The Facility provided information, through responses to various EPA-issued Requests for Information, indicating that liquid and solid hazardous wastes were routinely disposed in the Hazardous Waste Landfill and that liquid hazardous wastes were routinely disposed into the sumps leading to the Ecology Center and then to the Injection Well.

14. Morton's records of waste disposal prior to mid-1996 are incomplete. The known quantities of hazardous wastes disposed in the Hazardous Waste Landfill and the Injection Well do not capture the total quantity of hazardous wastes ultimately disposed by the Facility on a yearly basis.

15. Morton has disposed unknown quantities of known and unknown hazardous wastes on-site but is unable to document that such disposal was limited to the Hazardous Waste Landfill or the Injection Well.

16. Based on information which has been incorporated into the Administrative Record, EPA has determined that the following known hazardous wastes were illegally disposed on-site:

- A. waste ash (F005 and F039);
- B. waste sludge (F039, F005, U239, F003, U012, F002 and/or U223);
- C. Toluene (F005);
- D. Methyl Ethyl Ketone (MEK) and MEK still bottoms (F005);
- E. Aniline (U012);
- F. Methylene chloride (F002);
- G. Toluene diisocyanate (U223);
- H. Methacrylic acid (D002);
- I. Methanol (D001, F003);
- J. Naphtha (D001);
- K. Sodium bisulfide (D003);
- L. Alpha methyl styrene (D001);
- M. off-specification products (D003);
- N. Thinner (D001);
- O. Heptane (D001);
- P. Hazardous Waste Landfill Leachate (F039); and
- Q. Xylene (U239).

17. Morton has admitted in correspondence and in its May 21, 1998 Response to a RCRA Section 3007 Information Request that for an unspecified period of time, the Hazardous Waste Landfill did not operate properly, thereby allowing releases of known and unknown hazardous wastes to the environment.

18. Morton has provided EPA with information indicating, and EPA has discovered through other sources, that various accidents, explosions, complaints and incidents involving the management of the Facility have occurred periodically. In addition to the fact that Morton disposed of all hazardous waste on-site prior to October 26, 1996, the following further indicates that hazardous wastes have been present or released throughout the Facility:

A. On November 20, 1970, a fire occurred at a tank at the Hydrocarbon (HC) Plant. This tank contained approximately 1,250 gallons of butadiene and the fire resulted from the build-up of polyoxides, which is accompanied by the evolution of heat and subsequently, a rise in pressure.

B. On December 19, 1978, two boys sustained burns on their legs and feet while passing across Morton property located to the northeast of the Urethane Plant. This area was being used as a dump by Morton and contained caustic waste from the Thiacril Plant and waste from the Facility automotive shop. In correspondence from Morton to its insurance carrier with regard to this accident, Alan Johnson, Division Safety Manager, noted that Morton should "fence off the dump completely" and "consider a different method of waste disposal".

C. On September 8, 1980, there was an industrial fire in the polymer scrubber duct work that resulted from welding of a ventilation pipe.

D. On May 15, 1981, there was an industrial fire at a "dump area," according to a Moss Point Fire Department Run Report. This fire resulted from the explosion of drums with unknown contents.

E. On June 18, 1981, an explosion of a tank containing ammonia occurred at the Formal Plant. The Facility theorized that the cause of the explosion was due to an equipment malfunction. It was concluded that Formal entered the tank of ammonia, which can cause high pressure and temperatures. The tank broke into five pieces that traveled from 450 feet to approximately 1,000 feet. The flying tank pieces and the force of the explosion caused major damage, which included: cutting down a light pole, shredding a tank to the east, knocking cooling towers to the west off their foundations and bending and tearing the towers from their frames. A black residue covered a large area to the west and south of the tank and a large cloud of gas rose from the tank.

F. On April 18, 1983, Kendall Construction filed a complaint with Morton regarding the need for additional protective equipment and safeguards against the contents of the V Lagoons while its contractors removed sludges. After explaining its concerns to Morton, Kendall Construction removed its equipment and stated that its employees would not return to complete the closure of the V Lagoons until the sludges were removed. Morton employees continued with the sludge removal.

G. In 1984 there was a fire in the Hazardous Waste Landfill. During this fire, wooden pallets and chemical drums were found to be burning.

H. On February 24, 1984, Morton received an anonymous call. The caller complained that sulfur odors from Morton were causing him breathing problems. Morton did not identify the cause of these odors.

I. On September 11, 1985, there was a fire in one of the Facility's buildings. The Escatawpa Fire Department and the Moss Point Fire Department responded.

J. On October 21, 1985, there was a fire in the T Lagoon. This fire resulted from an exothermic reaction. There was an approximately five foot diameter pool in the T Lagoon that was bubbling. This pool was emitting a yellowish smoke and a burned sulfur odor at 11:15 a.m. At 11:40 a.m., after it began to rain, the pool emitted a pink and purple smoke and a halogen odor. The cause of this fire was not determined.

K. On February 4, 1986, there was a fire in the Hazardous Waste Landfill. MDEQ investigated the cause of the fire, but the investigation was inconclusive because Facility representatives could not tell MDEQ what chemicals were present in the Hazardous Waste Landfill. Following the MDEQ inspection, the Facility theorized that elemental sulfur disposed in the Hazardous Waste Landfill was ignited by sparks from a bull dozer being used to cover the waste. The Facility further concluded that the elemental sulfur must have begun to smolder, which was not realized by employees as they left for the day.

L. On June 5, 1986, a hydrochloric acid railroad car near the Formal Plant was observed to be venting fumes. The release was due to a leak in the relief valve housing of the railcar.

M. On March 5, 1988, a vapor leak occurred in a railroad car containing hydrochloric acid.

N. On March 30, 1988, MDEQ investigated a complaint received from the U.S. Coast Guard. This complaint was in regard to drums buried in a surface impoundment. These drums were supposedly empty and being buried in the V Lagoons. However, MDEQ noted as part of its investigation that liquid from the drums was flowing to a low depression between the impoundments, suggesting that they may not have been empty at the time of burial.

O. On August 12, 1988, a complaint was received by MDEQ regarding a strong, acrid odor coming from Morton. This odor was determined to be associated with the closing of the V Lagoon.

P. On August 15, 1988, two contract employees were overcome by vapors during closure of the V Lagoons. Oligomer was pooled in one area of one of the V Lagoons impoundments, which resulted in a buildup of heat and gas. Lime kiln dust was added to

the pool and a pocket of gas was penetrated. Following the penetration of the pocket of gas the windshield of the excavator became clouded. The operator of the excavator left the cab to clear the windshield. Then the operator's face shield also became clouded. At this time, the operator removed his respirator and was rendered unconscious. Another operator entered the area without a respirator, became incoherent, and was rendered unconscious. Hydrogen sulfide gas was detected at 66 parts per million (ppm) and sulfur dioxide was detected at 200 ppm.

Q. On November 11, 1988, the Moss Point Fire department received a citizen complaint regarding odors coming from Morton. This odor was determined to be the result of sulfide and sulfur dioxide gas generation during the stabilization of the sludge in the V Lagoons.

R. On December 14, 1988, a release of waste water from the Ecology Center's Tank T-111, to the ditch leading to the Escatawpa River occurred. This release occurred because of an open tank valve.

S. On August 7, 1989, hydrochloric acid vapors escaped from a delivery railroad car. The Moss Point Fire Department was called and the railroad car was sealed.

T. On June 8, 1990, a release of by-products from a chemical reaction occurred in the Urethane Plant. The resulting fumes and thick grey smoke required the evacuation of the Facility, the EMF facility next door, the businesses on Highway 63, and residents to the east of the plant. Highway 63 was also closed. A local family, which was not evacuated, was treated for throat and lung irritations.

U. On September 5, 1990, MDEQ received a complaint regarding disposal at the Facility. The complainant reported that drums were being emptied into a 100-foot hole near the Hazardous Waste Landfill. MDEQ was told by Morton during an investigation of this complaint that drums of off-specification product and solid waste were poured out into this area prior to disposal in the Hazardous Waste Landfill.

V. On January 13, 1991, the Facility determined that there were high levels of toluene vapors at the east pug mill. These vapors resulted from disposal of waste toluene in a sump leading to the Ecology Center. Morton's report of the incident stated that an alternative means of waste toluene disposal was needed.

W. On January 27, 1991, the Facility detected toluene vapors at the sump in the Ecology Center. These vapors resulted from disposal of waste toluene in a sump leading to the Ecology Center. Morton's report of the incident indicated that this was a repeat of the January 13, 1991, incident and that an alternative means of waste toluene disposal was needed.

X. On November 2, 1992, there was a release of what Morton believed was oil in the ditch leading to the Escatawpa River. However, Morton subsequently determined, on November 4, 1992, that the material released was waste toluene that had been disposed in sump T-1. The cause of the accident was determined by Morton to be improper disposal of waste toluene. Morton noted that a "more suitable method of disposal of waste drums" should be developed.

Y. On February 8, 1993, the Facility reported the release of hydrogen sulfide fumes. The Facility was evacuated until the fumes dissipated.

Z. On April 26, 1993, a complaint was received regarding odors coming from the Facility. According to Morton, the odors were the result of nitrous oxides being emitted from the nitric acid cleaning bath in the Liquid Polysulfide Plant. MDEQ received a complaint regarding this incident from a Morton employee.

AA. On July 30, 1993, ethylene glycol was released to the Escatawpa River from the NPDES outfall. This release resulted from an open valve in the Monomer production area.

BB. On April 22, 1996, a release from the Ecology Center's Tank T-111 spilled into the Ecology Center containment area and then over an area east of the retaining wall.

CC. On July 8, 1996, Morton estimated that several gallons of leachate from the Hazardous Waste Landfill were released to the soil on the outer bank of the Hazardous Waste Landfill.

DD. On February 21, 1997, Morton estimated that several gallons of leachate from the Hazardous Waste Landfill were released to the soil on the outer bank of the Hazardous Waste Landfill.

EE. On February 25, 1997, Morton estimated that several gallons of leachate from the Hazardous Waste Landfill were released to the soil on the outer bank of the Hazardous Waste Landfill.

FF. On July 30, 1997, Morton estimated that several gallons of leachate from the Hazardous Waste Landfill were released to the soil on the outer bank of the Hazardous Waste Landfill.

GG. On January 23, 1998, Morton estimated that approximately ten gallons of leachate were released to the soil on the outer bank of the Hazardous Waste Landfill.

HH. On January 28, 1998, Morton estimated that approximately 20 gallons of leachate from the Hazardous Waste Landfill were released to the soil on the outer bank of the Hazardous Waste Landfill.

II. During September 1998, an ex-employee made a complaint regarding new work practices. The employee threatened to report illegal activity at the Facility to EPA.

JJ. On September 17, 1998, approximately 500 pounds of sludge from the Ecology Center was spilled on the road leading to the Hazardous Waste Landfill. Some of this sludge spilled on the soil. The sludge and several inches of topsoil were excavated and placed back in the hopper.

KK. On September 28, 1998, Morton estimated that approximately 3,750 gallons of contact storm water was released from the Hazardous Waste Landfill as a result of Hurricane Georges.

20. EPA has discovered that Morton drums have been or may have been disposed off-site. These instances, as set forth below, as well as the accidents, explosions, complaints and incidents described above, suggest that drums of hazardous waste have been or may have been buried, or their contents disposed, at unknown locations throughout the Facility:

A. On February 19, 1992, the Stennis Space Center reported to MDEQ that two drums marked "Thiokol" were abandoned on private property in Ocean Springs. The drums were noted by MDEQ as containing "a thick white dough," but the contents were not sampled.

B. In January 28, 1993, a complaint was received by MDEQ regarding fifteen drums of Morton waste located on private property in Overt, Mississippi. These drums contained drilling mud but MDEQ determined that three of the drums had a pH above 12.5. Therefore, these three drums contained corrosive hazardous waste, D002.

C. On November 22, 1993, MDEQ received a complaint regarding drums being buried on Hans Construction Company property near the Facility. A subsequent MDEQ inspection found no visible evidence of buried drums.

21. The Escatawpa River is approximately 0.31 miles south of the Facility. The Facility is bounded on the west by the Mississippi Export Railroad. Within a one mile radius there are residential areas to the northwest, east, and south of the Facility. There are also industrial areas to the west and southeast. The remaining land is undeveloped.

22. In the December 1998 HSWA permit application, Morton identified human and environmental receptors in the area of influence of the Facility. In addition, human and environmental receptors have been identified in historical literature and subsurface investigations. These receptors include fresh water in the Alluvial Aquifer, fresh water in the Citronelle, Graham Ferry and Pascagoula Formations, brackish water ecosystems, the Escatawpa River, and the Yellow-Blotched Sawback Turtle, which can be found in the Escatawpa River system.

23. The Alluvial Aquifer consists of gravel, sand, sandy clay and silt. This aquifer is approximately thirty (30) feet deep. Depth to the water table occurs between two (2) to six (6) feet. This shallow depth to groundwater and the nature of the Alluvial Aquifer provides little natural protection for groundwater. Normally, hydraulic conductivity for this type of geologic material is high and would make this aquifer potentially suitable for water supply purposes. The Alluvial Aquifer discharges to sea water in salt marshes, which creates a potential pathway to brackish water ecosystems.

24. The Citronelle Formation consists of materials similar to those found in the Alluvium and may be hydraulically connected to the Alluvium. This formation is approximately 100 feet thick. In the past, the Citronelle Formation was a source of water for municipal, industrial and domestic wells.

25. The Graham Ferry Formation consists of sand that is approximately 400 feet thick. This formation is one of the most persistent and widely developed aquifers in the Pascagoula area. In 1982, this aquifer was providing approximately sixty (60) percent of all groundwater used in the Pascagoula area. Currently, this aquifer is the most widely used drinking water source in Pascagoula. There is a dense gray clay bed that is twenty (20) to forty (40) feet thick that occurs between the Citronelle Formation and the Graham Ferry Formation. Clay layers were encountered within the Graham Ferry Formation during drilling of some of the wells on-site. However, these layers are most likely discontinuous and there may be a direct connection from the Citronelle Formation to the Graham Ferry Formation.

26. The Pascagoula Formation consists of sand that has a low to moderately high permeability and is approximately 2,000 feet thick. Freshwater occurs to depths of 1,200 feet on the coast and 1,600 feet in central Jackson County.

27. The direction of groundwater flow has not been adequately addressed in historical literature. Water table contour maps indicate that ground water flow is to the southeast toward the Escatawpa River. However, ground water monitoring wells located throughout the Facility may have impacted the groundwater flow direction.

28. U.S. Geological Survey water level contour maps, dated 1958 - 1960, indicate that the T Lagoons and V Lagoons recovery wells at the Facility have created cones of depression. If contaminated groundwater were present within the influence of the recovery wells downward

migration would have been accelerated relative to the natural rate of groundwater and contaminant movement. Downward hydraulic gradients have persisted in this area from 1942.

29. From 1960 to 1982 the water table in the Graham Ferry Formation beneath Morton declined by fifteen (15) feet. Rates of horizontal groundwater movement at the Facility are estimated between seventeen (17) to seventy (70) feet per year.

30. There are seven drinking water wells within a one mile radius of the Facility. These wells draw water from the Graham Ferry Formation. Six (6) of the wells are located within 1,000 feet of the southeastern boundary of the Facility.

31. The Escatawpa River is most likely a natural discharge area for surface water runoff and shallow groundwater. Contamination in the Alluvial Aquifer could be carried to the Escatawpa River through surface water runoff and shallow groundwater. The Escatawpa River is used for recreation and could gain groundwater recharge from the aquifers underlying the Facility.

32. The Yellow-Blotched Sawback Turtle has a federal status of "threatened" and a state status of "in danger of extinction." This species is present in the Escatawpa River system.

33. Facility information shows that there are several plumes of hazardous constituents beneath the Facility and off-site. The known plumes occur in the Alluvial and Citronelle Aquifers. The hazardous constituents that are present in the Alluvial Aquifer plume include: carbon disulfide, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, bis (2-chloroethyl) ether, bis (2-chloroethoxy) methane, toluene, MEK, and 1,1-dichloroethene. The hazardous constituents that are present in the Citronelle Aquifer plume include: 1,1-dichloroethane, 1,2-dichloroethane, bis (2-chloroethyl) ether, bis (2-chloroethoxy) methane, 1,1-dichloroethene, and MEK.

### III. HAZARDOUS WASTES KNOWN TO HAVE BEEN DISPOSED ON-SITE

34. ALPHA METHYL STYRENE is an ignitable hazardous waste, D001. It is considered an EPA hazardous waste. Routes of entry include inhalation of vapor, eye contact, and skin contact. Alpha Methyl Styrene is irritating to the eyes and skin. Alpha Methyl Styrene vapors may cause dizziness or suffocation. When handling Alpha Methyl Styrene eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

35. ANILINE is a commercial chemical product that becomes a listed hazardous waste, U012, when discarded or intended to be discarded. Aniline is listed due to ignitability, D001, and toxicity. It is considered an EPA hazardous substance and hazardous waste. The blood, cardiovascular system, liver, and kidneys are impacted by aniline exposure. Liquid aniline is mildly irritating to the eyes and may cause corneal damage. Absorption through by inhalation of aniline vapor or through skin absorption of liquid aniline causes anoxia. Moderate exposure can

cause cyanosis and continued exposure leads to irritability, drowsiness, dyspnea, unconsciousness and can lead to death without treatment. When handling aniline respirators, eye protection, and protective clothing should be worn at all times when in the presence of vapor concentration.

36. HEPTANE is an EPA ignitable hazardous waste, D001. Heptane impacts the skin, respiratory system, lungs, and peripheral nervous system and routes of entry include inhalation of vapor, ingestion, skin contact, and eye contact. Heptane cause dermatitis and irritation of the mucous membrane. Chemical pneumonitis, pulmonary edema, and hemorrhage occurs with aspiration of the liquid. High concentrations cause narcosis, which results in vertigo, incoordination, intoxication, slight nausea, loss of appetite, and a gasoline taste in the mouth. When handling Heptane eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn .

37. MEK is a constituent of F005, a listed hazardous waste, U159, and ignitable, D001. MEK that has been used for its solvent properties and subsequently discarded meets the F005 listing. MEK that has been used as a commercial chemical product and subsequently discarded or intended to be discarded is a listed hazardous waste, U159. MEK is listed due to ignitability, D001, and toxicity. It is considered an EPA hazardous waste. MEK retards fetal development and has some teratogenic effects in the offspring of exposed pregnant rats. In humans, the routes of entry include inhalation, ingestion, eye and skin contact and the central nervous system and lungs are impacted . Exposure to MEK can cause irritation of the eyes and nose, headaches, dizziness and vomiting. When handling MEK eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

38. METHACRYLIC ACID is an EPA corrosive hazardous waste, D002. Liquid methacrylic acid can cause blindness after direct contact with the eyes or skin corrosion after direct contact with the skin. When handling methacrylic acid rubber gloves, a face shield, and overalls should be worn.

39. METHONAL is a constituent of F003, a listed hazardous waste, U154, and ignitable, D001. Methonal that has been used for its solvent properties and subsequently discarded meets the F003 listing. Methonal that has been used as a commercial chemical product and subsequently discarded or intended to be discarded is a listed hazardous waste, U154. Methonal is listed due to ignitability, D001. The eyes, skin, central nervous system, and the gastrointestinal system is affected by Methonal and routes of entry include inhalation of Methonal vapor, skin absorption of liquid, ingestion, eye contact, and skin contact. Methonal may cause optic nerve damage or blindness especially when mediated with metabolic oxidation products. Methonal defats the skin and causes mild dermatitis. Methonal causes central nervous system effects resulting from narcosis, such as nausea, headache, giddiness, and loss of consciousness. When handling Methonal eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

40. METHYLENE CHLORIDE is a constituent of F002 and a listed hazardous waste, U080. Methylene Chloride that has been used for its solvent properties and subsequently discarded meets the F002 listing. Methylene Chloride that has been used as a commercial chemical product and subsequently discarded or intended to be discarded is a listed hazardous waste, U080. Methylene Chloride is listed due to toxicity. It is a potential carcinogen and a priority toxic pollutant that increases the incidence of lung and liver tumors and sarcomas in rats and mice. In humans, methylene chloride irritates the eyes, mucous membranes and skin. Exposure to high levels adversely affects the central and peripheral nervous systems and the heart. In experimental animals, methylene chloride is reported to cause kidney and liver damage, convulsions and paresis. Levels should not exceed zero in water to protect human health. An additional lifetime cancer risk of 1 in 100,000 results at a level of  $1.9\mu\text{g/L}$ . When handling Methylene Chloride eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

41. NAPHTHA is an EPA ignitable hazardous waste, D001. In animals, the kidneys and spleen have been impacted. In humans, the respiratory system, eyes, and skin are impacted by Naphtha and routes of entry include inhalation of vapor, ingestion, skin contact, and eye contact. Naphtha is irritating to the upper respiratory tract. Repeated contact may cause "chapping" and photosensitivity. Naphtha causes central nervous system depression and leads to inebriation, followed by headache and nausea. Acute overexposure can cause anorexia and nervousness for several months after exposure. When handling Naphtha eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

42. SODIUM BISULFIDE is an EPA reactive hazardous waste, D003. Routes of entry include inhalation of vapor, ingestion, skin contact, and eye contact. Sodium Bisulfide may cause severe burns to the skin and eyes. Inhalation, ingestion, or skin contact with Sodium Bisulfide may cause severe injury or death. Effects of inhalation of Sodium Bisulfide may be delayed. Inhalation of Sodium Bisulfide fire decomposition products may cause severe injury or death. When handling Sodium Bisulfide eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

43. TOLUENE is a constituent of F005, a listed hazardous waste, U220, and ignitable, D001. Toluene that has been used for its solvent properties and subsequently discarded meets the F005 listing. Toluene that has been used as a commercial chemical product and subsequently discarded or intended to be discarded is a listed hazardous waste, U220. Toluene is listed due to ignitability, D001, and toxicity. It is considered an EPA hazardous waste constituent and an EPA priority toxic pollutant. Toluene is embryotoxic in animals, and the incidence of cleft palate increased in the offspring of dosed mice. Chronic inhalation exposure to high levels of toluene caused cerebellar degeneration and an irreversible encephalopathy in animals. In humans, toluene causes irritation of the eyes, respiratory tract, and skin and affects the central nervous system, liver, kidneys. Repeated or prolonged contact with liquid toluene can remove natural lipids from the skin resulting in fissured dermatitis. Acute exposure results in depression of the central

nervous system. Chronic exposure to high levels of toluene can cause permanent brain and speech damage, vision problems, hearing problems, poor balance, and loss of muscle control. Symptoms of toluene exposure include: headache, fatigue, muscular weakness, drowsiness, collapse, and coma. When handling toluene eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

44. TOLUENE DISSOCYANTE is a commercial chemical product that becomes a listed hazardous waste, U223, when discarded or intended to be discarded. Toluene Diisocyanate (TDI) is listed due to reactivity, D003, and toxicity. It is considered an EPA hazardous waste. The respiratory system, skin, and lungs are impacted by TDI and routes of entry include inhalation of vapor, ingestion, eye contact, and skin contact. TDI can cause irritation of the eyes, respiratory tract, and the skin. Contact with the eyes cause severe irritation, which can cause permanent damage if untreated. Irritation of the respiratory tract can lead to bronchitis and pulmonary edema. Nausea, vomiting, and abdominal pain are also symptoms. Liquid TDI, when left in contact with the skin, causes swelling, blistering, and redness. Swallowing TDI burns the mouth and stomach. Sensitization to TDI occurs, which can cause an asthmatic reaction. When handling TDI eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

45. XYLENE is a commercial chemical product that becomes a listed hazardous waste, U239, when discarded or intended to be discarded. Xylene is listed due to ignitability, D001. It is considered an EPA hazardous substance and hazardous waste. The central nervous system, eyes, gastrointestinal tract, blood, liver, kidneys, and skin are affected by xylene. Liquid xylene is an eye and mucous membrane irritant and aspiration of liquid xylene may cause chemical pneumonitis, pulmonary edema, and hemorrhage. Prolonged skin contact may cause drying and defatting of the skin, which may result in dermatitis. Eye damage may result from repeated exposure to high concentrations of xylene vapor. Acute exposure to xylene vapor may cause staggering, drowsiness, and unconsciousness. When handling xylene eye protection and clothing that prevents repeated exposure to prolonged skin contact should be worn.

#### IV. DETERMINATIONS

46. Based upon the foregoing Findings of Fact, and pursuant to Section 3013 of RCRA, EPA has hereby determined that Morton owns and operates a facility at which hazardous wastes are present and at which hazardous wastes have been generated, treated, stored and disposed.

47. Based upon the foregoing Findings of Fact, and pursuant to Section 3013(a) of RCRA, EPA has hereby determined that there may be a substantial hazard to human health or the environment due to the presence of hazardous wastes and constituents and potential releases of hazardous wastes and constituents at and from the Morton Facility.

48. EPA has further determined that Morton, as owner and operator of the Facility, is the party responsible for conducting the actions ordered herein, which are necessary to ascertain the nature and extent of the hazard to human health or the environment.

#### V. ORDER

49. Morton is unable to characterize the ultimate disposal of all hazardous wastes historically generated at this Facility. There is also substantial evidence of historic, unpermitted disposal of hazardous wastes, as well as other occurrences which caused or may have caused the release of hazardous wastes. Therefore, the entire site and impacted off-site environmental receptors must be evaluated.

50. The site evaluation must characterize the environmental setting of the Facility, identify and define the source(s) of past and present hazardous wastes and hazardous waste constituents, define the degree and extent of release of hazardous wastes and hazardous waste constituents, and identify potential or actual on-site and off-site environmental receptors. The resulting data must be of adequate technical content and quality to support the development and evaluation of a corrective action plan, if necessary. This site evaluation shall include monitoring, sampling of groundwater, soil, and sediments, analysis for Appendix VIII and IX hazardous constituents in all environmental media, reporting, and a magnetometer survey and additional geophysical or other methods suitable for locating waste disposal sites buried beneath the land surface. All sampling data shall be provided in electronic format.

51. Based upon the Findings of Fact and Determinations as set forth above, Morton is hereby ordered, pursuant to Section 3013 of RCRA, to submit a written proposal to EPA, within thirty (30) calendar days from the issuance of this Order, for carrying out monitoring, sampling, analysis and reporting which are necessary to ascertain the nature and extent of the hazard posed by treatment, storage, and disposal of hazardous wastes and hazardous waste constituents throughout the entire site. This proposal shall include the impacts to potential or actual on-site and off-site environmental receptors. Morton is hereby ordered to follow the format in Attachment A to this Order and to implement such proposal once approved, or modified and approved, by EPA, in accordance with the approved terms and schedules.

52. The written proposal, and subsequent reports, required to be submitted under this Order shall be mailed to:

Jeffrey T. Pallas, Chief  
South RCRA Enforcement and Compliance Section  
RCRA Enforcement and Compliance Branch  
Waste Management Division  
United States Environmental Protection Agency  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303-3104

and

Chuck Barlow, Chief  
Legal Division  
Mississippi Department of Environmental Quality  
P.O. Box 10385  
Jackson, Mississippi 39285-0385

VI. OPPORTUNITY TO CONFER

53. As provided in Section 3013(c) of RCRA, Morton or its representative has the right to confer with EPA on the actions required under Section V of this Order. The scheduling of a conference with EPA does not relieve Morton of the obligation to submit the written proposal required under Section V of this Order within thirty (30) calendar days of the issuance thereof. The opportunity to confer with EPA may be pursued by Morton either before or after the proposal required under Section V is due.

54. At any time prior to the submittal of the written proposal required under Section V of this Order, Morton or its representative may also provide information, in writing or in person, to EPA to show why it should not be subject to this Order, and may provide whatever additional information it believes is relevant to the disposition of this matter.

55. Any request for a conference with EPA or questions regarding this Order should be directed to:

Mary Greene  
Associate Regional Counsel  
U.S. Environmental Protection Agency, Region 4  
Atlanta Federal Center  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303  
(404) 562-9564

## VII. POTENTIAL CONSEQUENCES OF FAILURE TO COMPLY

56. Pursuant to Section 3013(d) of RCRA, 42 U.S.C. § 6934(d), if EPA determines that Morton is not able to conduct the activities required by this Order, that Morton is not able to conduct the activities contained in the EPA-approved proposal, or that the actions carried out by Morton are unsatisfactory, then EPA itself may conduct monitoring, testing or analysis deemed reasonable to ascertain the nature and extent of the hazard associated with the facility, or authorize the State to conduct such monitoring testing or analysis. Morton may then be required to reimburse EPA for the costs of such activity pursuant to Section 3013(d) of RCRA.

57. In the event Morton fails or refuses to comply with any requirement of this Order, EPA may commence a civil action pursuant to Section 3013(e) of RCRA, 42 U.S.C. § 6934(e), to require compliance with this Order and to assess a civil penalty not to exceed \$5,500 for each day during which such failure or refusal occurs.

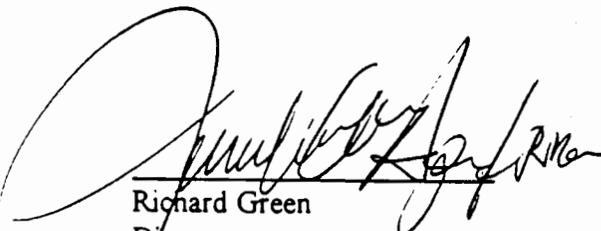
## VIII. IMMINENT AND SUBSTANTIAL ENDANGERMENT

Notwithstanding any other provision of this Order, an enforcement action may be brought against Morton pursuant to Section 7003 of RCRA, 42 U.S.C. § 6973, and/or any other applicable statutory or regulatory authority, should EPA find that the handling, storage, treatment, transportation or disposal of solid or hazardous waste at Morton may present an imminent and substantial endangerment to human health or the environment.

## IX. EFFECTIVE DATE

The effective date of this Order is the date it is signed by the Director of the Waste Management Division, EPA Region 4.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region 4

  
Richard Green  
Director  
Waste Management Division

Dated: April 9, 1999

CERTIFICATE OF SERVICE

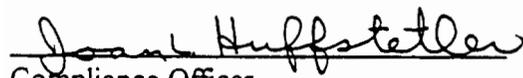
I hereby certify that I have caused a copy of the foregoing Order Requiring Monitoring, Testing, Analysis and Reporting to be served upon the person designated below on the date below, by causing said copy to be deposited in the U.S. Mail, First Class (Certified Mail, Return Receipt Requested, postage prepaid), at Atlanta, Georgia, in an envelope addressed to:

Gary L. McFarlin  
Plant Manager  
Morton Adhesives and Chemical Specialties Group  
5724 Elder Ferry Road  
Moss Point, Mississippi, 39563-9752

I have further caused the original and one copy of said Order and the Certificate of Service to be filed with the Regional Hearing Clerk, United States Environmental Protection Agency, Atlanta Federal Center, 61 Forsyth Street, S.W., Atlanta, Georgia 30303-3104, on the date specified below.

These are said persons' addresses last known to subscriber.

Dated this 9<sup>th</sup> day of April, 1999.

  
Compliance Officer  
RCRA Enforcement and Compliance Branch  
Waste Management Division

ATTACHMENT A  
SITE EVALUATION PROPOSAL  
SCOPE OF WORK

## Site Evaluation Proposal - Scope of Work

Because Morton is unable to characterize the ultimate disposal of all hazardous wastes historically generated at the Facility the entire site and impacted environmental receptors must be evaluated. The site evaluation must characterize the environmental setting of the Facility, identify and define past and present source(s) of hazardous wastes and hazardous waste constituents, define the degree and extent of release of hazardous wastes and hazardous constituents, and identify potential or actual on-site and off-site environmental receptors. The resulting data must be of adequate technical content and quality to support the development and evaluation of a corrective action plan if necessary. This site evaluation shall include monitoring, sampling of groundwater, surface water, soil, and sediments, analysis for Appendix VIII and Appendix IX hazardous constituents in all environmental media, reporting, and a magnetometer survey and additional geophysical or other methods suitable for locating waste disposal sites buried beneath the land surface. All sampling data shall be provided in electronic format.

### Site Evaluation Proposal

This proposal shall include the development of the following plans, which shall be prepared concurrently:

A. Project Management Plan

A Project Management Plan that includes a discussion of the technical approach, schedules and personnel shall be prepared. The Project Management Plan will also include a description of qualifications of personnel performing or directing the site evaluation, including contractor personnel. This plan shall also document the overall management approach to the site evaluation.

B. Sampling and Analysis Plan(s)

The Sampling and Analysis Plan shall document all monitoring procedures, field sampling, sampling procedures and sample analysis performed during the evaluation to characterize the environmental setting, source, and releases of hazardous waste and hazardous constituents, so as to ensure that all information and data are valid and properly documented. The Sampling Strategy and Procedures shall be in accordance with EPA Region 4's Science and Ecosystem Support Division's Standard Operating Procedure and Quality Assurance Manual (SOP) (May 1996). Any deviations from this reference must be requested by the applicant and approved by EPA. The Sampling and Analysis Plan must specifically discuss the following unless the SOP procedures are specifically referenced.

1. Sampling Strategy

- a. Selecting an appropriate grid of sampling locations, depths, etc. to adequately address the Facility property;
- b. Obtaining all necessary ancillary data;
- c. Determining conditions under which sampling should be conducted;
- d. Determining which parameters are to be measured and where;
- e. Selecting the frequency of sampling and length of sampling period;
- f. Selecting the types of samples and number of samples to be collected.

2. Sampling Procedures

- a. Documenting field sampling operations and procedures, including:
  - i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, preservatives, and absorbing reagents);
  - ii) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;
  - iii) Documentation of specific sample preservation method;
  - iv) Calibration of field instruments;
  - v) Submission of field-biased blanks, where appropriate;
  - vi) Potential interferences present at the facility;
  - vii) Construction materials and techniques, associated with monitoring wells and piezometers;
  - viii) Field equipment listing and sampling containers;
  - ix) Sampling order; and
  - x) Decontamination procedures.
- b. Selecting appropriate sample containers;
- c. Sampling preservation; and
- d. Chain-of-custody, including:
  - i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
  - ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Sample Analysis

Sample analysis shall be conducted in accordance with SW-846: Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (most recent version). The sample analysis section of the Sampling and Analysis Plan shall specify the following:

- a. Chain-of-custody procedures, including:
  - i) Identification of a responsible party to act as sampling custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
  - ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
  - iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.
- b. Sample storage;
- c. Sample preparation methods;
- d. Analytical Procedures, including:
  - i) Scope and application of the procedure;
  - ii) Sample matrix;
  - iii) Potential interferences;
  - iv) Precision and accuracy of the methodology; and
  - v) Method detection limits.
- e. Calibration procedures and frequency;
- f. Data reduction, validation and reporting;

- g. Internal quality control checks, laboratory performance and systems audits and frequency, including:
  - i) Method blank(s);
  - ii) Laboratory control sample(s);
  - iii) Calibration check sample(s);
  - iv) Replicate sample(s);
  - v) Matrix-spiked sample(s);
  - vi) Control charts;
  - vii) Surrogate samples;
  - viii) Zero and span gases; and
  - ix) Reagent quality control checks.
- h. Preventive maintenance procedures and schedules;
- i. Corrective action (for laboratory problems); and
- j. Turnaround time.

C. Geophysical Investigation Plan

A Geophysical Investigation Plan must be developed to locate waste disposal site(s) buried beneath the land surface. This plan shall document all field procedures performed during the evaluation to characterize the subsurface and shall include, at a minimum, a magnetometer survey. Additional geophysical or other methods suitable for locating buried waste disposal should also be used.

D. Data Management Plan

A Data Management Plan must be developed to document and track evaluation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation. All data shall be provided in electronic format.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;
- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Property or component measures; and
- f. Result of analysis (e.g. concentration).

2. Tabular Displays

The following data shall be presented in tabular displays as follows:

- a. Unsorted (raw) data;
- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for statistical analysis, as appropriate;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transits, three dimensional graphs, etc.):

- a. Display sampling location and sampling grid;
- b. Indicate boundaries of sampling area, and area where more data are required;
- c. Display geographical extent of contamination;

- d. Illustrate changes in concentration in relation to distances from the source, time, depth or other parameters; and
- e. Indicate features affecting inter-media transport and show potential receptors.

E. Health and Safety Plan

A Health and Safety Plan for all field activity shall be prepared. The Health and Safety Plan must, at a minimum, describe the goals and objectives of the health and safety program. This plan must be consistent with the Facility Contingency Plan, OSHA Regulations, NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Activities (1985), all state and local regulations and other implementing agency guidance as provided. The Health and Safety Plan should:

- 1. List and describe the potentially hazardous substances that could be encountered by field personnel during construction and/or operation and maintenance activities. Discuss the following:
  - a. Inhalation Hazards;
  - b. Dermal Exposure;
  - c. Ingestion Hazards;
  - d. Physical Hazards; and
  - e. Overall Hazard Rating.

Include a table that, at a minimum, lists: known contaminants, highest observed concentration, media, symptoms/effects of acute exposure.

- 2. List and describe the personal protection/monitoring equipment, including:
  - a. A description of personal protection levels and all monitoring equipment for each operational task;
  - b. A description of any action levels and corresponding response actions (i.e., when will levels of safety be upgraded);
  - c. A description of decontamination procedures and areas; and
  - d. the Site Organization and Emergency Contacts.

3. List and identify all contacts (including phone numbers).
4. Identify the nearest hospital and provide a regional map showing the shortest route from the facility to the hospital.
5. Describe site emergency procedures and any site safety organizations.
6. Include evacuation procedures for neighbors (where applicable).
7. Include a facility map showing emergency station locations (first aid, eye wash areas, etc.).

### Site Evaluation Report Requirements

The site evaluation must: characterize the environmental setting of the Facility; define the contamination source(s); define the degree and extent of release of hazardous waste and hazardous waste constituents; and identify actual or potential on-site and off-site receptors.

The evaluation should result in data of adequate technical content and quality to support the development and evaluation of a corrective action plan if necessary. The information contained in previously developed documents may be referenced as appropriate, but must be summarized in both the site evaluation proposal and the final report.

All sampling and analyses shall be conducted in accordance with the Sampling and Analysis Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

#### A. Environmental Setting

The Environmental Setting section shall characterize the following as they relate to identified sources, pathways and areas of releases of hazardous constituents from Solid Waste Management Units.

##### 1. Hydrogeology

The evaluation of the hydrogeologic conditions at the facility must provide the following information:

- a. A description of the regional and Facility specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility, including:
  - i) Regional and facility specific stratigraphy: description of

- strata including strike and dip, and identification of stratigraphic contacts;
  - ii) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
  - iii) Depositional history;
  - iv) Regional and facility specific ground-water flow patterns; and
  - v) Identification and characterization of areas and amounts of recharge and discharge.
- b. An analysis of any topographic features that might influence the ground-water flow system.
- c. Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:
- i) Hydraulic conductivity and porosity (total and effective);
  - ii) Lithology, grain size, sorting, degree of cementation;
  - iii) An interpretation of hydraulic interconnections between saturated zones; and
  - iv) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content etc.).
- d. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
- i) Water-level contour and/or potentiometric maps;
  - ii) Hydrologic cross sections showing vertical gradients
  - iii) The flow system, including the vertical and horizontal

components of flow; and

- iv) Any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences.
- e. A description of man-made influences that may affect the hydrology of the site, identifying:
  - i) Local water-supply and production wells with an approximate schedule of pumping; and
  - ii) Man-made hydraulic structures (pipelines, french drains, ditches, etc.).

## 2. Soils

Soil and rock units above the water table in the vicinity of contaminant release(s) must be characterized. Such characterization may include, but not be limited to, the following types of information as appropriate:

- a. Surface soil distribution;
- b. Soil profile, including ASTM classification of soils;
- c. Transects of soil stratigraphy;
- d. Hydraulic conductivity (saturated and unsaturated);
- e. Relative permeability;
- f. Bulk density;
- g. Porosity;
- h. Soil sorption capacity;
- i. Cation exchange capacity;
- j. Soil organic content;
- k. Soil pH;
- l. Particle size distribution;
- m. Depth of water table;
- n. Moisture content;
- o. Effect of stratification on unsaturated flow;
- p. Infiltration;
- q. Evapotranspiration;
- r. Storage capacity;
- s. Vertical flow rate; and
- t. Mineral content.

3. Surface Water and Sediment

Surface water bodies in the vicinity of the Facility must be characterized. Such characterization may include, but not be limited to, the following activities and information:

- a. Description of the temporal and permanent surface water bodies including:
  - i) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
  - ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and construction and purpose;
  - iii) For streams, ditches, and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, flooding tendencies (i.e., 100 year event), discharge point(s), and general contents.
  - iv) Drainage patterns; and
  - v) Evapotranspiration.
- b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.
- c. Description of sediment characteristics including:
  - i) Deposition area;
  - ii) Thickness profile; and
  - iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

4. Air

The climate in the vicinity of the Facility must be characterized. Such information may include, but not be limited to:

- a. A description of the following parameters:
  - i) Annual and monthly rainfall averages;
  - ii) Monthly temperature averages and extremes;
  - iii) Wind speed and direction;
  - iv) Relative humidity/dew point;
  - v) Atmospheric pressure;
  - vi) Evaporation data;
  - vii) Development of inversions; and
  - viii) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence. (i.e., Hurricanes)
- b. A description of topographic and man-made features which affect air flow and emission patterns, including:
  - i) Ridges, hills or mountain areas;
  - ii) Canyons or valleys;
  - iii) Surface water bodies (e.g., rivers, lakes, bays, etc.); and
  - iv) Buildings.

B. Source Characterization

For those sources from which releases of hazardous constituents have been detected analytical data shall be collected to completely characterize the wastes and the areas where wastes have been placed, to the degree that is possible without undue safety risks, including: type, quantity, physical form; disposition (containment or nature of deposits); and Facility characteristics affecting release

(e.g., facility security, and engineering barriers). This shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area Characteristics:

- a. Location of unit/disposal area;
- b. Type of unit/disposal area;
- c. Design features;
- d. Operating practices (past and present)
- e. Period of operation;
- f. Age of unit/disposal area;
- g. General physical conditions; and
- h. Method used to close the unit/disposal area.

2. Waste Characteristics:

- a. Type of wastes placed in the unit;
  - i) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
  - ii) Quantity; and
  - iii) Chemical composition.
- b. Physical and chemical characteristics such as;
  - i) Physical form (solid, liquid, gas);
  - ii) Physical description (e.g., powder, oily sludge);
  - iii) Temperature;
  - iv) pH;
  - v) General chemical class (e.g., acid, base, solvent);
  - vi) Molecular weight;
  - vii) Density;
  - viii) Boiling point;
  - ix) Viscosity;

- x) Solubility in water;
  - xi) Cohesiveness of the waste; and
  - xii) Vapor pressure.
- c. Migration and dispersal characteristics of the waste such as:
- i) Sorption capability;
  - ii) Biodegradability, bioconcentration, biotransformation;
  - iii) Photodegradation rates;
  - iv) Hydrolysis rates; and
  - v) Chemical transformations.

The procedures used in making the above determinations must be documented.

C. Characterization of Releases of Hazardous Constituents

Analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the Facility, in accordance with the Sampling and Analysis plan as required above, shall be collected. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contamination. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The following types of contamination must be addressed at the Facility:

1. Groundwater Contamination

The groundwater investigation shall characterize any plumes of contamination detected at the facility. This investigation shall at a minimum provide the following information:

- a. A description of the horizontal and vertical extent of any plume(s) of hazardous constituents originating from or within the facility;
- b. The horizontal and vertical direction of contamination movement;

- c. The velocity of contaminant movement;
- d. The horizontal and vertical concentration profiles of hazardous constituents in the plume(s);
- e. An evaluation of factors influencing the plume movement; and
- f. An extrapolation of future contaminant movement.

The procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.) shall be documented

2. Soil Contamination

An investigation shall be done to characterize the contamination of the soil and rock units above the saturated zone in the vicinity of any contaminant release. The investigation may include the following information:

- a. A description of the vertical and horizontal extent of contamination;
- b. A description of appropriate contaminant and soil chemical properties within the contaminant source area and plume. This may include contaminant solubility, speciation, absorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;
- c. Specific contaminant concentrations;
- d. The velocity and direction of contaminant movement; and
- e. An extrapolation of future contaminant movement.

The procedures used in making the above determinations shall be documented.

3. Surface Water and Sediment Contamination

A surface water investigation shall be conducted to characterize contamination in surface water bodies resulting from releases of hazardous constituents at the facility. The investigation may include, but not be limited to, the following information:

- a. A description of the horizontal and vertical extent of any plume(s) originating from the facility, and the extent of contamination in underlying sediments;
- b. The horizontal and vertical direction of contaminant movement;
- c. The contaminant velocity;
- d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;
- e. An extrapolation of future contaminant, movement; and
- f. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

4. Air Contamination

An investigation of the air shall be conducted to characterize gaseous releases of hazardous constituents into the atmosphere or any structures or buildings. This investigation may provide the following information:

- a. A description of the horizontal and vertical direction and velocity of contaminant movement;
- b. The rate and amount of the release; and
- c. The chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

The procedures used in making the above determinations shall be documented.

D. Potential Receptors

Data describing the human populations and environmental systems that are susceptible to contaminant exposure from the Facility shall be collected. Chemical analysis of biological samples and/or data on observable effects in ecosystems may also be obtained as appropriate. The following characteristics shall be identified:

1. Current local uses and planned future uses of groundwater:
  - a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
  - b. Location of ground water users, to include withdrawal and discharge wells, within one mile of the impacted area.

The above information should also indicate the aquifer or hydrogeologic unit used and/or impacted for each item.

2. Current local uses and planned future uses of surface waters directly impacted by the facility:
  - a. Domestic and municipal (e.g., potable and lawn/gardening watering);
  - b. Recreational (e.g. swimming, fishing);
  - c. Agricultural;
  - d. Industrial; and
  - e. Environmental (e.g., fish and wildlife propagation).
3. Human use of or access to the facility and adjacent lands, including but not limited to:
  - a. Recreation;
  - b. Hunting;
  - c. Residential;
  - d. Commercial; and
  - e. Relationship between population locations and prevailing wind direction.
4. A description of the biota in surface water bodies on, adjacent to, or affected by the facility.

5. A description of the ecology within the area adjacent to the facility.
6. A demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups
7. A description of any known or documented endangered or threatened species near the facility.

## Action Levels

### I. Definition

Action levels are conservative health-based concentrations of hazardous wastes and/or hazardous constituents determined to be indicators for the protection of human health or the environment. Action levels shall be set in accordance with Paragraphs 14 and 15 of the Consent Decree for all hazardous wastes and/or hazardous constituents identified in the Site Evaluation Report(s) for which Plaintiffs have reason to believe may have been released from the facility into the environment. Should the concentration of a hazardous wastes and/or hazardous constituents in soils, sediments, surface water, groundwater or air exceed the action levels established for any environmental medium, Plaintiffs may require the Respondent to conduct a Corrective Measures Study (CMS) in accordance with Paragraph 17. If the concentrations of hazardous wastes and/or hazardous constituents released from the facility are below established action levels, Plaintiffs have the authority to require a CMS pursuant to Paragraph 17 as necessary to protect human health or the environment given site-specific exposure conditions, cumulative effects, ecological concerns or other factors.

Action levels shall be concentration levels which satisfy the following criteria:

- A.
  1. Derived in a manner consistent with EPA guidelines for assessing human and environmental health risks from hazardous constituents, based on current, scientifically valid studies, and not set below background levels or practical quantitation limits; and
  2. For human health action levels to address carcinogens, represent a concentration associated with an excess upper bound lifetime cancer risk of  $1 \times 10^{-6}$  for carcinogens or an alternative scenario as demonstrated by Morton to be appropriate; and
  3. For human health action levels to address systemic toxicants, represent a concentration to which the human population (including sensitive subgroups) could be exposed on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime.
  4. For constituents found in any media for which actions levels cannot be established using the criteria contained herein, Plaintiffs shall establish action levels for these constituents as necessary to protect human health and the environment.

## **II. Soils**

- A. Action levels for constituents in soils shall be derived from Region 9 Preliminary Remediation Goals (PRGs), Region 3 Risk Based Concentrations (RBCs), EPA's Soil Screening Guidance, or other EPA-approved action levels. The selection of appropriate risk-based action levels will depend upon site-specific conditions.

## **III. Sediments**

- A. Action levels for constituents in sediment shall be based on whether human health or ecological health is the major concern. If human health predominates, action levels shall be derived in the same manner as for soils as specified above. If ecological health predominates, action levels for constituents in sediment shall be concentrations specified as:
  - 1. Latest Sediment and Soil Screening Values for ecological risks as calculated by EPA, Region 4;
  - 2. If action levels are not available from these screening values, then other EPA-approved risk-based action levels will be utilized based on site-specific conditions.

## **IV. Groundwater**

- A. Action levels for constituents in groundwater shall be concentrations specified as:
  - 1. Maximum Contaminant Levels (MCLs);
  - 2. For constituents for which MCLs have not been promulgated, action levels shall be established based upon EPA, Region 9 PRGs, or other EPA-approved risk-based action levels.

## **V. Surface Water**

- A. Action levels for constituents in surface water shall be concentrations based on:
  - 1. EPA, Region 4 Surface Water Screening Values for ecological risk;
  - 2. If Region 4 Screening Values are not available, Ambient Water Quality Criteria (AWQC) as established by the Clean Water Act;

3. If Screening Values or AWQC numbers are not available, Region 9 PRGs, Region 3 RBCs or other EPA-approved risk-based action levels will be utilized. The selection of appropriate action levels will depend upon site-specific conditions.

## **VI. Air**

- A. Action levels for constituents in air shall be concentrations specified as:
  1. Region 9 RBCs;
  2. If values are not available from the Region 9 RBCs, the reference concentrations and reference doses from EPA's Integrated Risk Information System (IRIS) database will be utilized;
  3. If values are not available from IRIS, risk-based concentrations from other regions may be used based on site-specific factors.
  4. If the foregoing values are not available, then action levels will be calculated by Plaintiffs on a site-specific basis.

## **VII. State Risk-Based Action Levels**

MDEQ's "Risk Evaluation Procedures for Voluntary Cleanup and Redevelopment of Brownfield Sites" shall also be considered in establishing action levels where relevant and appropriate.

CORRECTIVE MEASURE STUDY (CMS) OUTLINE

The purpose of the CMS portion of the RCRA corrective action process is to identify and evaluate potential remedial alternatives for the releases of hazardous constituents that have been identified at the facility through the RFI or other investigations to need further evaluation. The scope and requirements of the CMS are balanced with the expeditious initiation of remedies and rapid restoration of contaminated media. The scope and requirements of the CMS should be focused to fit the complexity of the site-specific situation. It is anticipated that Permittee's with sites with complex environmental problems may need to evaluate a number of technologies and corrective measure alternatives. For other facilities, however, the evaluation of a single corrective measure alternative may be adequate. Therefore, a streamlined or focused approach to the CMS may be initiated. Information gathered during any stabilizations or interim measures will be used to augment the CMS and in cases where corrective action goals are met, may be a substitute for the final CMS.

Regardless of whether a streamlined/focused or a detailed CMS is required, a CMS Work Plan and CMS Report are generally required elements. The requirements for a full, detailed CMS are listed below. The Agency has the flexibility not to require sections of the plan and/or report, where site-specific situations indicate that all requirements are not necessary. Additionally, the Agency may require additional studies besides these discussed in order to support the CMS.

I. Corrective Measures Study (CMS) Work Plan

A. Elements of the CMS Work Plan

The Corrective Measures Study (CMS) Work Plan shall include at a minimum the following elements:

1. A site-specific description of the overall purpose of the CMS;
2. A description of the corrective measure objectives, including proposed target media cleanup standards (e.g., promulgated federal and state standards) and preliminary points of

compliance or a description of how a risk assessment will be performed (e.g., guidance documents);

3. A description of the specific corrective measure technologies and/or corrective measure alternatives which will be studied;
4. A description of the general approach to investigating and evaluating potential corrective measures;
5. A detailed description of any proposed pilot, laboratory and/or bench scale studies;
6. A proposed outline for the CMS Report including a description of how information will be presented;
7. A description of overall project management including overall approach, levels of authority (include organization chart), lines of communication, project schedules, budget and personnel. Include a description of qualifications for personnel directing or performing the work;
8. A project schedule that specifies all significant steps in the process and when key documents (e.g., CMS Progress Reports, draft CMS Report) are to be submitted to the Agency;
9. A detailed Public Involvement Plan.

## II. Corrective Measures Study (CMS) Report

The detail of a CMS may vary based upon the complexity of the site, on-going Interim Measures, etc. However, the CMS Report may include the following elements:

### A. Introduction/Purpose

The Permittee shall describe the purpose of the CMS Report and provide a summary description of the project.

### B. Description of Current Situation

The Permittee shall submit a summary and an update to the information describing the current situation at the facility and

the known nature and extent of the contamination as documented by the RCRA Facility Investigation (RFI) Report. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measures alternative(s). The Permittee shall provide an update to information presented in the RFI regarding previous response activities and interim measures which have or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

C. Establishment of Proposed Media Specific Cleanup Standards

The Permittee shall describe the proposed media cleanup standards and point of compliance. The standards must be either background, promulgated federal and state standards or risk-derived standards. If media clean-up standards are not proposed, then the Agency will unilaterally propose setting media clean-up standards to either background, promulgated federal and state standards or the most conservative risk-derived standards.

D. Identification, Screening and Development of Corrective Measure Technologies

1. Identification: List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the corrective action objectives. Include a table that summarizes the available technologies. Permittee should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies.
2. Screening: The Permittee shall screen the corrective measure technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of

waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

- a. **Site Characteristics:** Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration.
  - b. **Waste Characteristics:** Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site).
  - c. **Technology Limitations:** During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.
3. **Corrective Measure Development:** The Permittee shall assemble the technologies that pass the screening step into specific alternatives that have the potential to meet the corrective action objectives for each media. Options for addressing less complex sites could be relatively straight-forward and may only require evaluation of a single or limited number of alternatives. Each alternative may consist of an individual technology or a combination used in sequence (i.e., treatment train). Different alternatives may be considered for separate

areas of the facility, as appropriate. List and briefly describe each corrective measure alternative.

E. Evaluation of a Final Corrective Measure Alternative

For each remedy which warrants a more detailed evaluation (i.e., those that passed through the screening step), including those situations when only one remedy is being proposed, the Permittee shall provide detailed documentation of how the potential remedy will comply with each of the standards listed below. These standards reflect the major technical components of remedies including cleanup of releases, source control and management of wastes that are generated by remedial activities. The specific standards are as follows:

1. Protect human health and the environment.
2. Attain media cleanup standards set by EPA.
3. Control the source of releases so as to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment.
4. Comply with applicable standards for management of wastes.
5. Other factors.

In evaluating the selected alternative or alternatives, the Permittee shall prepare and submit information that documents that the specific remedy will meet the standards listed above. The following guidance should be used in completing this evaluation.

1. **Protect Human Health and the Environment**

Corrective action remedies must be protective of human health and the environment. Remedies may include those measures that are needed to be protective, but are not directly related to media cleanup, source control or management of wastes. An example would be a requirement to provide alternative drinking water supplies in order to prevent exposures to releases from an aquifer used for drinking water purposes. Therefore, the Permittee shall provide a discussion of any short term

remedies necessary to meet this standard, as well as discuss how the corrective measures alternative(s) meet this standard.

2. Attain Media Cleanup Standards

Remedies will be required to attain media cleanup standards. As part of the necessary information for satisfying this requirement, the Permittee shall address whether the potential remedy will achieve the remediation objectives. An estimate of the time frame necessary to achieve the goals shall be included. Contingent remedies may be proposed if there is doubt if the initial remedy will be successful (e.g., contingent remedies to innovative technologies).

3. Control of Sources of Releases

The Permittee shall address the issue of whether source control measures are necessary, and if so, the type of actions that would be appropriate. Any source control measure proposed should include a discussion on how well the method is anticipated to work given the particular situation at the facility and the known track record of the specific technology.

4. Comply With any Applicable Standards for Management of Wastes

The Permittee shall include a discussion of how the specific waste management activities will be conducted in compliance with all applicable state and federal regulations (e.g., closure requirements, LDRs)

5. Other Factors

There are five general factors that will be considered as appropriate by EPA in selecting/approving a remedy that meets the four standards listed above. These five decision factors include:

- a. Long-term reliability and effectiveness;
- b. Reduction in the toxicity, mobility or volume of wastes;
- c. Short-term effectiveness;

d. Implementability; and

e. Cost.

Examples of the type of information to include are provided below:

- a. Long-term reliability and effectiveness: The Permittee may consider whether the technology, or combination of technologies, have been used effectively under analogous site conditions, whether failure of any one technology in the alternative would have any immediate impact on receptors, and whether the alternative would have the flexibility to deal with uncontrollable changes at the site. Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. In addition, each corrective measure alternative should be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the level of effectiveness can be maintained.
- b. Reduction in the toxicity, mobility or volume of wastes: As a general goal, remedies will be preferred that employ techniques that are capable of eliminating or substantially reducing the potential for the wastes in SWMUs and/or contaminated media at the facility to cause future environmental releases. Estimates of how the corrective measure alternative will reduce toxicity, mobility and or volume of the waste is required and may be accomplished through a comparison of initial site conditions to expected post-corrective measures conditions.
- c. Short-term effectiveness: The Permittee shall evaluate each corrective measure alternative for short-term effectiveness. Possible factors to consider are fire, explosion, exposure to hazardous constituents and potential threats associated with the treatment, excavation, transportation and re-disposal or containment of the waste material.

- d. **Implementability:** Information to consider when assessing Implementability include:
- i) The administrative activities needed to implement the corrective measure alternative (e.g. permits, rights of way, etc.) and the length of time these activities will take;
  - ii) The constructibility, time for implementation, and time for beneficial results;
  - iii) The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and
  - iv) The availability of prospective technologies for each corrective measure alternative.
- e. **Cost:** The Permittee shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs. The capital costs shall include, but are not limited to, costs for: engineering, site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, etc. The operation and maintenance costs shall include labor, training, sampling and analysis, maintenance materials, utilities, waste disposal and/or treatment, etc. Costs shall be calculated as the net present value of the capital and operation and maintenance costs.

F. Justification and Recommendation of the Corrective Measure or Measures

The Permittee shall justify and recommend in the CMS Report a corrective measure alternative for consideration by the Agency. Such a recommendation should include a description and supporting rationale for the preferred alternative that is consistent with the corrective action standards and remedy selection decision factors discussed above. In addition, this recommendation shall include summary tables which allow the alternative or alternatives to be

understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors shall be highlighted. The Regional Administrator will select the corrective measure alternative or alternatives to be implemented based on the results presented in the CMS Report.

Attachment D

OSWER Directive 9902.3-2A  
May 1994

# RCRA CORRECTIVE ACTION PLAN

(Final)

Office of Waste Programs Enforcement  
Office of Solid Waste

## Chapter V: Corrective Measures Implementation

### Introduction

The purpose of the Corrective Measures Implementation (CMI) portion of the RCRA corrective action process is to design, construct, operate, maintain and monitor the performance of the corrective measure(s) selected by the implementing agency. Thus far in the corrective action program, the CMI process generally entailed a conceptual design phase for the selected remedy, a detailed review of intermediate plans and specifications by the implementing agency, and the development of final plans and specifications.

The new CAP encourages implementing agencies to make the process more flexible and streamlined. Intermediate design plans may or may not be required at specific design points (30, 50, 60, 90, and/or 95% are given as examples). Other sections may be combined or eliminated.

For example, a CMI Workplan may be submitted to the implementing agency rather than the Conceptual Design (Section I), Intermediate Plans and Specifications (Section III), and Construction Workplan (Section V). The implementing agency may approve (or conditionally approve with comments) the CMI Workplan and not require submittal of Final Plans and Specifications (Section IV) and Construction Workplan (Section V). A Health and Safety Plan (Section VIII) and Public Involvement Plan (Section IX) also may be included in a CMI Workplan. Implementing agencies may consider other approaches to expedite the process and initiate implementation of corrective measure(s) more quickly.

As discussed in Chapter II, one such approach involves initiating ISMs prior to the CMI. Plans submitted for ISMs (e.g., health and safety plans, public involvement plans) may be used or updated during the CMI, particularly since ISMs should be compatible with final corrective measures. In most cases this will be true, with the only changes being an expansion/adjustment of the ISMs to constitute a final remedy.

Another approach to expedite the CMI process involves setting final remedial (or stabilization) media cleanup standards but not specifying the process by which the standards would be attained. This performance-based approach should lower oversight by the implementing agency and promote faster cleanup. The implementing agency should give special consideration to the types of progress reports (see Section X) it will require from the Permittee/Respondent so that it can monitor progress toward achieving the media cleanup standards if this approach is taken.

[NOTE: With certain exceptions, the provisions set out in sections I through XI are intended as guidance, and these provisions should be justifiable and tailored to site-specific conditions when incorporated into permits or orders. The exceptions are certain provisions which are based on specific regulatory or statutory requirements applicable to permitting. Regulatory and statutory requirements are binding and do not require site-specific justification. Applicable requirements include: financial responsibility requirements in RCRA sections 3004(u) and 3004(v) and 40 CFR § 264.101.]

## Scope of Work for Corrective Measures Implementation

### Purpose =

The purpose of the Corrective Measures Implementation (CMI) program is to design, construct, operate, maintain and monitor the performance of the corrective measure or measures selected by the implementing agency. Corrective measures are intended to protect human health and/or the environment from releases from the facility. The Permittee/Respondent will furnish all personnel, materials and services necessary to implement the corrective measures program.

### Scope =

The documents required for Corrective Measures Implementation are, unless the implementing agency specifies otherwise, a Conceptual Design, Operation and Maintenance Plan, Intermediate Plans and Specifications, Final Plans and Specifications, Construction Workplan, Construction Completion Report, Corrective Measure Completion Report, Health and Safety Plan, Public Involvement Plan, and Progress Reports. The scope of work (SOW) for each document is specified below. The SOW's are intended to be flexible documents capable of addressing both simple and complex site situations. If the Permittee/Respondent can justify, to the satisfaction of the implementing agency, that a plan and/or report or portions thereof are not needed in the given site-specific situation, then the implementing agency may waive that requirement.

The implementing agency may require the Permittee/Respondent to conduct additional studies beyond what is discussed in the SOW's in order to support the CMI program. The Permittee/ Respondent will furnish all personnel, materials and services necessary to conduct the additional tasks.

[NOTE: See introduction for discussion on streamlining sections of the CMI Scope of Work.]

The CMI consists of the following components, which for clarity are designated as sections in this Scope of Work.

**Section I: Conceptual Design (15% Design Point)**

- A. Introduction/Purpose
- B. Corrective Measures Objectives
- C. Conceptual Model of Contaminant Migration
- D. Description of Corrective Measures
- E. Project Management
- F. Project Schedule
- G. Design Criteria
- H. Design Basis
- I. Waste Management Practices
- J. Required Permits
- K. Long-lead Procurement Considerations
- L. Appendices

**Section II: Operation and Maintenance Plan**

- A. Introduction/Purpose
- B. Project Management
- C. System Description
- D. Personnel Training
- E. Start-up Procedures
- F. Operation and Maintenance Procedures
- G. Replacement Schedule for Equipment and Installed Components
- H. Waste Management Practices

I. Sampling and Analysis

J. Corrective Measure Completion Criteria

K. Operation and Maintenance Contingency Procedures

L. Data Management and Documentation Requirements

Section III: Intermediate Plans and Specifications (30, 50, 60, 90 and/or 95% Design Point)

Section IV: Final Plans and Specifications (100% Design Point)

Section V: Construction Workplan

A. Introduction/Purpose

B. Project Management

C. Project Schedule

D. Construction Quality Assurance/Quality Control Programs

E. Waste Management Procedures

F. Sampling and Analysis

G. Construction Contingency Procedures

H. Construction Safety Procedures

I. Documentation Requirements

J. Cost Estimate/Financial Assurance

Section VI: Construction Completion Report

Section VII: Corrective Measure Completion Report

Section VIII: Health and Safety Plan

Section IX: Public Involvement Plan

Section X: Progress Reports

Section XI: Proposed Schedule

## Section I: Conceptual Design (15% Design Point)

The Permittee/Respondent shall prepare a Conceptual Design (CD) that clearly describes the size, shape, form, and content of the proposed corrective measure; the key components or elements that are needed; the designer's vision of the corrective measure in the form of conceptual drawings and schematics; and the procedures and schedules for implementing the corrective measure(s). It should be noted that more than one conceptual design may be needed in situations where there is a complex site with multiple technologies being employed at different locations. The implementing agency may require approval of the CD prior to implementation. The CD must, at a minimum, include the following elements:

- A. **Introduction/Purpose:** Describe the purpose of the document and provide a summary description of the project.
- E. **Corrective Measures Objectives:** Discuss the corrective measure objectives including applicable media cleanup standards.
- C. **Conceptual Model of Contaminant Migration:** Present a conceptual model of the site and contaminant migration. The conceptual model consists of a working hypothesis of how the contaminants may move from the release source to the receptor population. The conceptual model is developed by looking at the applicable physical parameters (e.g., water solubility, density, Henry's Law Constant, etc.) for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to groundwater, etc.). Describe the phase (water, soil, gas, non-aqueous) and location where contaminants are likely to be found. This analysis may have already been done as part of earlier work (e.g., Current Conditions Report). If this is the case, then provide a summary of the conceptual model with a reference to the earlier document.
- D. **Description of Corrective Measures:** Considering the conceptual model of contaminant migration, qualitatively describe what the corrective measure is supposed to do and how it will function at the facility. Discuss the feasibility of the corrective measure and its ability to meet the corrective measure objectives.
  - 1. **Data Sufficiency:** Review existing data needed to support the design effort and establish whether or not there is sufficient accurate data available for this purpose. The Permittee/Respondent must summarize the assessment findings and specify any additional data needed to complete the corrective

measure design. The implementing agency may require or the Permittee/Respondent may propose that sampling and analysis plans and/or treatability study workplans be developed to obtain the additional data. Submittal times for any new sampling and analysis plans and/or treatability study workplans will be determined by the implementing agency and will be included in the project schedule.

- E. Project Management: Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure design and the implementation effort (including contractor personnel).
- F. Project Schedule: The project schedule must specify all significant steps in the process and when all CMI deliverables (e.g., Operation and Maintenance Plan, Corrective Measure Construction Workplan, etc.) are to be submitted to the implementing agency.
- G. Design Criteria: Specify performance requirements for the overall corrective measure and for each major component. The Permittee/Respondent must select equipment that meets the performance requirements.
- H. Design Basis: Discuss the process and methods for designing all major components of the corrective measure. Discuss the significant assumptions made and possible sources of error. Provide justification for the assumptions.
  - 1. Conceptual Process/Schematic Diagrams.
  - 2. Site plan showing preliminary plant layout and/or treatment area.
  - 3. Tables listing number and type of major components with approximate dimensions.
  - 4. Tables giving preliminary mass balances.
  - 5. Site safety and security provisions (e.g., fences, fire control, etc.).
- I. Waste Management Practices: Describe the wastes generated by the construction of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

- J. **Required Permits:** List and describe the permits needed to construct and operate the corrective measure. - Indicate on the project schedule when the permit applications will be submitted to the applicable agencies and an estimate of the permit issuance date.
- K. **Long-Lead Procurement Considerations:** The Permittee/Respondent shall prepare a list of any elements or components of the corrective measure that will require custom fabrication or for some other reason must be considered as long-lead procurement items. The list must include the reason why the items are considered long-lead items, the length of time necessary for procurement, and the recognized sources of such procurement.
- L. **Appendices including:**
1. **Design Data -** Tabulations of significant data used in the design effort;
  2. **Equations -** List and describe the source of major equations used in the design process;
  3. **Sample Calculations -** Present and explain one example calculation for significant or unique design calculations; and
  4. **Laboratory or Field Test Results.**

## Section II: Operation and Maintenance Plan

The Permittee/Respondent shall prepare an Operation and Maintenance (O&M) Plan that outlines procedures for performing operations, long term maintenance, and monitoring of the corrective measure. A draft Operation and Maintenance Plan shall be submitted to the implementing agency simultaneously with the draft Plans and Specifications (see Section III). A final Operation and Maintenance Plan shall be submitted to the implementing agency simultaneously with the final Plans and Specifications. The O&M plan shall, at a minimum, include the following elements:

- A. **Introduction/Purpose:** Describe the purpose of the document and provide a summary description of the project.
- B. **Project Management:** Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will operate and maintain the corrective measures (including contractor personnel).

- C. **System Description:** Describe the corrective measure and identify significant equipment.
- D. **Personnel Training:** Describe the training process for O&M personnel. The Permittee/Respondent shall prepare, and include in the technical specifications governing treatment systems, the contractor requirements for providing appropriate service visits by experienced personnel to supervise the installation, adjustment, start up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.
- E. **Start-Up Procedures:** Describe system start-up procedures including any operational testing.
- F. **Operation and Maintenance Procedures:** Describe normal operation and maintenance procedures including:
1. Description of tasks for operation;
  2. Description of tasks for maintenance;
  3. Description of prescribed treatment or operation conditions; and
  4. Schedule showing frequency of each O&M task.
- G. **Replacement Schedule for Equipment and Installed Components.**
- H. **Waste Management Practices:** Describe the wastes generated by operation of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.
- I. **Sampling and Analysis:** Sampling and monitoring activities may be needed for effective operation and maintenance of the corrective measure. To ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented, the Permittee/Respondent shall prepare a Quality Assurance Project Plan (QAPP) to document all monitoring procedures, sampling, field measurements and sample analyses performed during these activities. The Permittee/Respondent shall use quality assurance, quality control, and chain-of-custody procedures approved by the implementing agency. These procedures are described in the soon to be released EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5), which will replace Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80, December 29, 1980.
- J. **Corrective Measure Completion Criteria:** Describe the process and

criteria (e.g., groundwater cleanup goal met at all compliance points for 1 year) for determining when corrective measures have achieved media cleanup goals. Also describe the process and criteria for determining when maintenance and monitoring may cease. Criteria for corrective measures such as a landfill cap must reflect the need for long-term monitoring and maintenance. Satisfaction of the completion criteria will trigger preparation and submittal of the Corrective Measures Completion Report.

K. O&M Contingency Procedures:

1. Procedures to address system breakdowns and operational problems including a list of redundant and emergency back-up equipment and procedures;
2. Alternate procedures to be implemented if the corrective measure suffers complete failure. The alternate procedures must be able to prevent release or threatened releases of hazardous wastes or constituents which may endanger human health and/or the environment or exceed media cleanup standards;
3. The O&M Plan must specify that, in the event of a major breakdown and/or complete failure of the corrective measure (includes emergency situations), the Permittee/Respondent will orally notify the implementing agency within 24 hours of the event and will notify the implementing agency in writing within 72 hours of the event. Written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment; and
4. Procedures to be implemented in the event that the corrective measure is experiencing major operational problems, is not performing to design specifications and/or will not achieve the cleanup goals in the expected time frame. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure were to fail, then the secondary would be implemented. This section would thus specify that if the primary corrective measure failed, then design plans would be developed for the secondary measure.

L. Data Management and Documentation Requirements: The O&M Plan shall specify that the Permittee/Respondent collect and maintain the

following information: -

1. - Progress Report Information -
2. - Monitoring and laboratory data;
3. - Records of operating costs; and
4. - Personnel, maintenance and inspection records.-

This data and information should be used to prepare Progress Reports and the Corrective Measure Completion Report.

[NOTE: See Section X for guidance on what kind of information may be required in progress reports.]

Section III: Intermediate Plans and Specifications (30, 50, 60, 90 and/or 95% Design Point)

[NOTE: The Permittee/Respondent may propose or the implementing agency may require the submittal of several intermediate plans and specifications (e.g., at the 60% Design Point) or none at all.]

The Permittee/Respondent shall prepare draft Plans and Specifications that are based on the Conceptual Design but include additional design detail. A draft Operation and Maintenance Plan and Construction Workplan shall be submitted to the implementing agency simultaneously with the draft Plans and Specifications. The draft design package must include drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- - General Site Plans
- - Process Flow Diagrams
- - Mechanical Drawings
- - Electrical Drawings
- - Structural Drawings
- - Piping and Instrumentation Diagrams
- - Excavation and Earthwork Drawings
- - Equipment Lists
- - Site Preparation and Field Work Standards
- - Preliminary Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications to the implementing agency, the Permittee/Respondent shall:

- - Proofread the specifications for accuracy and consistency with the conceptual design and
- - Coordinate and cross-check the specifications and drawings.

#### Section IV: Final Plans and Specifications (100% Design Point)

The Permittee/Respondent shall prepare Final Plans and Specifications that are sufficient to be included in a contract document and be advertised for bid. A final Operation and Maintenance Plan and Construction Workplan shall be submitted to the implementing agency simultaneously with the final Plans and Specifications. The final design package must consist of the detailed drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- General Site Plans
- - Process Flow Diagrams
- - Mechanical Drawings
- - Electrical Drawings
- - Piping and Instrumentation Diagrams
- - Structural Drawings
- - Excavation and Earthwork Drawings
- - Site Preparation and Field Work Standards
- - Construction Drawings
- - Installation Drawings
- - Equipment Lists
- - Detailed Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the final project specifications to the implementing agency, the Permittee/Respondent shall proofread the specifications for accuracy and consistency with the preliminary design; and coordinate and cross-check the specifications and drawings.

#### Section V: Construction Workplan

The Permittee/Respondent shall prepare a Construction Workplan which documents the overall management strategy, construction quality assurance procedures and schedule for constructing the corrective measure. A draft Construction Workplan shall be submitted to the implementing agency simultaneously with the draft Plans and Specifications and draft Operation and Maintenance Plan. A final Construction Workplan shall be submitted to the

implementing agency simultaneously with the final Plans and Specifications and final Operation and Maintenance Plan. Upon receipt of written approval from the implementing agency, the Permittee/Respondent shall commence the construction process and implement the Construction Workplan in accordance with the schedule and provisions contained therein. The Construction Workplan must be approved by the implementing agency prior to the start of corrective measure construction. The Construction Workplan must, at a minimum, include the following elements:

- A. Introduction/Purpose: Describe the purpose of the document and provide a summary description of the project.
- B. Project Management: Describe the construction management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure construction effort and provide construction quality assurance/quality control (including contractor personnel).
- C. Project Schedule: The project schedule must include timing for key elements of the bidding process, timing for initiation and completion of all major corrective measure construction tasks as specified in the Final Plans and Specifications, and specify when the Construction Completion Report is to be submitted to the implementing agency.
- D. Construction Quality Assurance/Quality Control Programs: The purpose of construction quality assurance is to ensure, with a reasonable degree of certainty, that a completed corrective measure will meet or exceed all design criteria, plans, and specifications. The Construction Workplan must include a complete Construction Quality Assurance Program to be implemented by the Permittee/Respondent.
- E. Waste Management Procedures: Describe the wastes generated by construction of the corrective measure and how they will be managed.
- F. Sampling and Analysis: Sampling and monitoring activities may be needed for construction quality assurance/quality control and/or other construction related purposes. To ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented, the Permittee/Respondent shall prepare a Quality Assurance Project Plan (QAPjP) to document all monitoring procedures, sampling, field measurements and sample analysis performed during these activities. The Permittee/Respondent shall use quality assurance, quality control, and chain-of-custody procedures approved by the implementing agency.

These procedures are described in the soon to be released EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5), which replaces Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80, December 29, 1980.

G. Construction Contingency Procedures:-

1. Changes to the design and/or specifications may be needed during construction to address unforeseen problems encountered in the field. Procedures to address such circumstances, including notification of the implementing agency, must be included in the Construction Workplan;
2. The Construction Workplan must specify that, in the event of a construction emergency (e.g. fire, earthwork failure, etc.), the Permittee/Respondent will orally notify the implementing agency within 24 hours of the event and will notify the implementing agency in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment; and
3. Procedures to be implemented if unforeseen events prevent corrective measure construction. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure could not be constructed, then the secondary would be implemented. This section would thus specify that if the primary corrective measure could not be constructed, then design plans would be developed for the secondary measure.

H. Construction Safety Procedures: Construction safety procedures should be specified in a separate Health and Safety Plan. [See Section VIII]

I. Documentation Requirements

The Permittee/Respondent shall describe how analytical data and results will be evaluated, documented, and managed.  
[See Appendix B]

J. Cost Estimate/Financial Assurance

[NOTE: See 40 CFR § 264.101]

Financial assurance for corrective measure construction and operation - may be required by an enforcement order, facility permit, or permit modification. The Construction Workplan must include a cost estimate and specify which financial mechanism will be used and when the mechanism will be established. The cost estimate shall include both construction and operation and maintenance costs. An initial cost estimate shall be included in the draft Construction Workplan and a final cost estimate shall be included in the final Construction Workplan. The financial assurance mechanism may include a performance or surety bond, a trust fund, a letter of credit, financial test and corporate guarantee equivalent to that in 40 CFR § 265.143 or any other mechanism acceptable to the implementing agency.

Financial assurance mechanisms are used to assure the implementing agency that the Permittee/Respondent has adequate financial resources to construct and operate the corrective measure.

#### Section VI: Construction Completion Report

The Permittee/Respondent shall prepare a Construction Completion (CC) Report which documents how the completed project is consistent with the Final Plans and Specifications. A CC Report shall be submitted to the implementing agency when the construction and any operational tests have been completed. The CC Report shall, at a minimum, include the following elements:

1. Purpose;
2. Synopsis of the corrective measure, design criteria, and certification that the corrective measure was constructed in accordance with the Final Plans and Specifications;
3. Explanation and description of any modifications to the Final Plans and Specifications and why these were necessary for the project;
4. Results of any operational testing and/or monitoring, indicating how initial operation of the corrective measure compares to the design criteria;
5. Summary of significant activities that occurred during construction. Include a discussion of problems encountered and how they were addressed;
6. Summary of any inspection findings (include copies of key inspection documents in appendices);

7. As built drawings or photographs; and
8. Schedule indicating when any treatment systems will begin full scale operations.

#### Section VII: Corrective Measure Completion Report

The Permittee/Respondent shall prepare a Corrective Measure Completion (CMC) Report when the Permittee/Respondent believes that the corrective measure completion criteria have been satisfied. The purpose of the CMC Report is to fully document how the corrective measure completion criteria have been satisfied and to justify why the corrective measure and/or monitoring may cease. The CMC Report shall, at a minimum, include the following elements:

1. Purpose;
2. Synopsis of the corrective measure;
3. Corrective Measure Completion Criteria: Describe the process and criteria for determining when corrective measures, maintenance and monitoring may cease. Corrective measure completion criteria were given in the final Operation and Maintenance (O&M) Plan;
4. Demonstration that the completion criteria have been met. Include results of testing and/or monitoring, indicating how operation of the corrective measure compares to the completion criteria;
5. Summary of work accomplishments (e.g., performance levels achieved, total hours of treatment operation, total treated and/or excavated volumes, nature and volume of wastes generated, etc.);
6. Summary of significant activities that occurred during operations. Include a discussion of problems encountered and how they were addressed;
7. Summary of inspection findings (include copies of key inspection documents in appendices); and
8. Summary of total operation and maintenance costs.

#### Section VIII: Health and Safety Plan

The Permittee/Respondent shall submit a Health and Safety Plan for all field activity, although it does not require review and approval by the implementing

agency. The Health and Safety Plan shall be developed as a stand alone document but may be submitted with the CMI Workplan. The Health and Safety Plan must, at a minimum, include the following elements:

1. Objectives: Describe the goals and objectives of the health and safety program (must apply to on-site personnel and visitors). The health and safety plan must be consistent with the Facility Contingency Plan, OSHA Regulations, NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985), all state and local regulations and other implementing agency guidance as provided.
2. Hazard Assessment: List and describe the potentially hazardous substances that could be encountered by field personnel during construction and/or operation and maintenance activities. Discuss the following:
  - Inhalation Hazards
  - Dermal Exposure
  - Ingestion Hazards
  - Physical Hazards
  - Overall Hazard Rating

Include a table that, at a minimum, lists: known contaminants, highest observed concentration, media, symptoms/effects of acute exposure.

3. Personal Protection/Monitoring Equipment
  - Describe personal protection levels and identify all monitoring equipment for each operational task.
  - Describe any action levels and corresponding response actions (i.e., when will levels of safety be upgraded).
  - Describe decontamination procedures and areas.
4. Site Organization and Emergency Contacts

List and identify all contacts (include phone numbers). Identify the nearest hospital and provide a regional map showing the shortest route from the facility to the hospital. Describe site emergency procedures and any site safety organizations. Include evacuation procedures for neighbors (where applicable).

Include a facility map showing emergency station locations (first = aid, eye wash areas, etc.).

## Section IX: Public Involvement Plan

*[NOTE: It is strongly recommended that the implementing agency oversee the Permittee's/Respondent's public involvement activities. Public involvement is an important part of RCRA corrective action. The public must be notified of significant changes to permits and orders regarding corrective action. In some cases, they also must be provided with the opportunity to review and comment on the changes. Further guidance on this process is in the document entitled RCRA Public Involvement Manual (EPA/530-R-93-006, September 1993).]*

All Public Involvement Plans prepared by the Permittee/Respondent shall be submitted to the implementing agency for comment and approval prior to use. Permittees/Respondents must never appear to represent or speak for the implementing agency before the public, other government officials, or the media.

Public Involvement activities that may be required of the Permittee/Respondent include, the following:

1. Conducting an open house or informal meeting (i.e., availability session) in a public location where people can talk to agency officials and Permittee/Respondent on a one-to-one basis;
2. Preparing fact sheets summarizing current or proposed corrective action activities (all fact sheets should be reviewed by the implementing agency prior to public distribution);
3. Communicating effectively with people who have vested interest in the corrective action activities, (e.g., providing written or verbal information in the foreign language of a predominantly non-English-speaking community); and
4. Maintaining an easily accessible repository (such as a town hall or public library or the facility itself, in some limited circumstances) of information on the facility-specific corrective action program, including the order or permit, approved workplans, and/or other reports.

A schedule for community relations activities shall be included in the Public Involvement Plan.

## Section X: Progress Reports

The Permittee/Respondent will, at a minimum, provide the implementing agency with signed [monthly, bimonthly, or quarterly] progress reports during corrective measure design, construction, operation and maintenance. The implementing agency may adjust the frequency of progress reporting to address site-specific needs. For example, more frequent progress reports may be needed to track critical activities such as corrective measure construction and start-up. Progress reports must, at a minimum, include the following elements:

1. A description of significant activities (e.g., sampling events, inspections, etc.) and work completed/work accomplishments (e.g., performance levels achieved, hours of treatment operation, treated and/or excavated volumes, concentration of contaminants in treated and/or excavated volumes, nature and volume of wastes generated, etc.) during the reporting period;
2. Summary of system effectiveness. Provide a comparison of system operation to predicted performance levels (applicable only during operation of the corrective measure);
3. Summaries of all findings (including any inspection results);
4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;
5. Summaries of all problems or potential problems encountered during the reporting period;
6. Actions being taken and/or planned to rectify problems;
7. Changes in personnel during the reporting period;
8. Projected work for the next reporting period; and
9. If requested by the implementing agency, the results of any sampling tests and/or other data generated during the reporting period.

## Section XI: Proposed Schedule

The Permittee/Respondent will provide the implementing agency with CMI reports according to the following schedule:

<u>Facility Submission</u>	<u>Due Date :</u>
Conceptual Design (Section I)	[ DATE ]
Operation and Maintenance Plan (Section II)	[ DATE ]
Intermediate Plans and Specifications (Section III)	[ NUMBER ] days after Conceptual Design Approval
Final Plans and Specifications (Sections IV)	[ NUMBER ] days after the implementing agency comments on Intermediate Plans and Specifications (date of approval may be tied to submittal of the CMI Workplan, if required)
Construction Workplan (Section V)	Concurrent with Final Plans and Specifications (or approval thereof)
Construction Completion Report (Section VI)	[ DATE ]
Corrective Measure Completion Report (Section VII)	[ DATE ] (based on when completion criteria are believed to have been satisfied)
Health and Safety Plan (Section VIII)	[ DATE ]
Public Involvement Plan (Section IX)	[ DATE ]
Progress Reports on Sections I through IX <i>[see Section X above for guidance on progress reports.]</i>	[ MONTHLY, BI- MONTHLY, other ]

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## **Revised Groundwater Monitoring Plan**

**Rohm and Haas Chemicals LLC  
Moss Point, Mississippi**

**RCRA Permit MSD 008 186 587**

**November 2, 2016**

**Prepared For:  
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## Panagon Archive Page

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Site Name	Rohm and Haas Chemicals LLC - Moss Point, MS
Document Title	Revised Groundwater Monitoring Plan
Document Class	Report
Document Subclass	Revised Groundwater Monitoring Plan
File Name	Revised Groundwater Monitoring Plan.doc
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Author(s) Name(s)	Jeff Snell
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Site Manager	Jack Bunton
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### Acronym List

ARW	Alluvial Recovery Well
1,2-DCA	1,2-Dichloroethane
BCEE	bis(2-Chloroethyl)ether
BCEM	bis(2-Chloroethoxy)methane
°C	degree Centigrade
cm/s	centimeters per second
COCs	Constituents of Concern
GMP	Groundwater Monitoring Plan
gpm	gallons per minute
gpd	gallons per day
IDW	investigation-derived waste
L/min	Liters per minute
LCRW	Lower Citronelle Recovery Well
µg/L	micrograms per Liter
MAROS	Monitoring and Remediation Optimization Software (Version 2.2)
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MDEQ	Mississippi Department of Environmental Quality
MSL	Mean Sea Level
NTU	Nephelometric Turbidity Unit
ORP	Oxidation Reduction Potential
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RMWSA™	Ricker Method® Well Sufficiency Analysis
S.U.	standard units
SVOCs	Semivolatile Organic Compounds

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TAP	T-Lagoon Alluvial Piezometer
TAR	T-Lagoon Alluvial Recovery Well
UCRW	Upper Citronelle Recovery Well
UPL	Upper Prediction Limit
USEPA	United States Environmental Protection Agency
VAR	V-Lagoon Alluvial Recovery Well
VOCs	Volatile Organic Compounds
VUCR	V-Lagoon Upper Citronelle Recovery Well

Rohm and Haas Chemicals LLC (Rohm and Haas) owns property located at 5724 Elder Ferry Road, Moss Point, Mississippi (the “Facility”; EPA ID No. MSD 008 186 587) (see Figure 1). The Facility, a former Morton International, Inc. (Morton) chemical specialty and adhesives plant, closed in December 2001 and the manufacturing buildings have since been demolished. Currently, the only operations at the Facility are environmental investigations and remediation being performed by Rohm and Haas pursuant to a Consent Decree entered on January 11, 2001 between Morton, the United States of America, and the State of Mississippi captioned, *United States of America and the State of Mississippi v. Morton International, Inc.*, C.A. No. 1: CV501BrB (“Consent Decree”).

The Consent Decree integrated existing permit requirements pertaining to groundwater monitoring, including those specified in a State of Mississippi Hazardous Waste Management Permit (Permit No. MSD 008 186 587; for Post Closure Care) effective June 4, 2007 and expiring on May 31, 2017 (RCRA Permit). Additionally, the Consent Decree incorporated by reference an Administrative Order issued by the United States Environmental Protection Agency (USEPA) on April 9, 1999 pursuant to Section 3013 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6934 (RCRA 3013 Order).

The RCRA 3013 Order required Morton to conduct a comprehensive site evaluation. A site evaluation program has been implemented at the Facility together with interim remedial measures. Interim remedial measures continue with the operation of a system of 28 recovery wells designed to contain on-site the identified organic groundwater plume emanating from the former Formal Process Area and remove adverse environmental impact. Site evaluation work has now been performed with the completion of numerous subsurface investigations and reports. The most recent and comprehensive has been completion of Phases I, II, III and IV of the Additional Conceptual Site Model (CSM) Investigation, which is summarized in detail in the June 1, 2015 *Phase IV Additional CSM Investigation Report*. As a result, Site hot spot source areas and potential migration pathways are better understood and delineated. Treatability studies for active remediation of the Formal and T-Lagoon areas are currently underway.

The Hazardous Waste Management Permit and RCRA 3013 Order requirements of the Consent Decree for this Facility include provisions for a semi-annual corrective action and compliance groundwater monitoring program. The RCRA groundwater monitoring program is focused around three solid waste management units and the former Formal area (Figure 2). Two of these units, the T-Lagoon and the V-Lagoon, are former wastewater retention ponds that were closed in accordance with RCRA provisions in 1986 and 1989, respectively. The hazardous waste landfill, which received solid waste produced at the Facility, was closed in 1999 in accordance with the RCRA Permit. The former Formal area is located in the southern portion of the property. Since August 2001, Rohm and Haas has submitted semi-annual groundwater monitoring reports pursuant to the Consent Decree; prior to that time, the semi-annual reports had been submitted pursuant to the RCRA Permit and RCRA 3013 Order requirements then in effect. Twenty-eight semi-annual reports have now been submitted.

The current site-wide groundwater monitoring program is specified in the *Groundwater Monitoring Plan* (GMP), prepared for Rohm and Haas by Groundwater Services, Inc., dated February 4, 2000, with revisions dated July 13, 2001, January 11, 2005, and June 11, 2005. The purpose of the monitoring program and associated reports is to keep track of Site groundwater conditions as a whole and present results of the groundwater sampling performed at the Facility. Under the provisions of the hazardous waste permit (RCRA Permit, No. 88-587-01), Rohm and Haas proposes to continue the ongoing sampling, reporting and evaluation for detection of potential releases from the closed hazardous waste landfill during semi-annual sampling events as proposed in the permit.

The Site groundwater sampling program has now been on-going for many years and currently includes 179 monitoring and recovery wells. This monitoring work has yielded a tremendous amount of groundwater data for review and trend/spatial analysis. With the amount of data now collected, the increased knowledge and understanding of Site conditions, the addition of numerous monitoring and recovery wells over the years and primarily stable or decreasing COC concentrations over most of the Site, the current GMP has become outdated and in need of updating. The purpose of this report is to update the current groundwater monitoring program to reflect current Site needs and conditions. To that affect, spatial and statistical trend analyses were performed to determine the appropriate monitoring schedule for each monitoring and recovery well. This evaluation was conducted by both a manual hands-on well by well basis performed by Parsons utilizing its extensive knowledge and experience with the Site and its data (subject of the text of this report), and the Patent Pending Ricker Method® Well Sufficiency Analysis (RMWSA™) performed by Earthcon Consultants, Inc. (Earthcon). The final proposed changes reflect a careful review and collaboration of the results of both methods. Sampling procedures have not been altered and will remain the same as now practiced to assure the collection of the highest quality and most useful/consistent data. Termination of some or all laboratory analysis has been proposed at select well heads.

Monitoring wells at the Facility are screened in the four uppermost water-bearing zones, which extend to approximately 180 feet below grade. The four uppermost water-bearing zones are the Alluvial, the Upper Citronelle, the Lower Citronelle, and the Graham Ferry Aquifers. Constituents of concern (COCs) have been detected in the Alluvial, Upper Citronelle, and Lower Citronelle Aquifers, with the underlying Graham Ferry Aquifer remaining unaffected. In an effort to contain and remove COCs from the subsurface, a pump and treat remediation system is currently operating at the Site with recovery wells in each of the three uppermost water-bearing zones. Information regarding the recovery effort is included in the semi-annual monitoring reports.

## 2.1 MONITORING AND RECOVERY WELL NETWORK

Monitoring and recovery wells are color coded by aquifer and presented on Figure 2. Each existing monitoring and recovery well is also indicated on Table 1 with its aquifer, total depth, surveyed top of casing elevation, ground surface elevation, depth to top of screen, depth to bottom of screen, and current monitoring frequency.

There are currently 12 recovery wells and 70 monitoring wells within the Alluvial Aquifer. These include five permitted hazardous waste landfill leak detection wells. Recovery wells are located in the Formal area (ARW-1, ARW-2, ARW-3, ARW-4 and ARW-5), the closed T-Lagoon area (TAR-1, TAR-2, TAR-3 and TAR-4) and the closed V-Lagoon area (VAR-1, VAR-2 and VAR-3). Most Site contamination is located within the Formal area at the southern portion of the Site and by far the most mass removal is taking place there. A much smaller and low concentration volatile organic compound (VOC) plume associated with a former drum storage area is located in the northern area of the Site at the southeast corner of the T-Lagoon. Alluvial Aquifer monitoring and recovery wells are focused on these areas and the former V-Lagoon, which no longer appears to be a significant on-going source.

There are currently six recovery wells [five in or near the Formal area (UCRW-1, UCRW-2, UCRW-3, UCRW-4 and UCRW-5) and one at the former V-Lagoon (VUCR-1R)] and 43 monitoring wells in the Upper Citronelle Aquifer. The recovery and monitoring wells are focused on monitoring and controlling the extent and concentrations of a COC plume centering on the Formal area and extending northwestward into the V-Lagoon area and southeastward toward the Escatawpa River. Migration of COCs toward the River has been successfully controlled and the numerous monitoring wells provide a more than necessary monitoring well network. However, pumping from recovery well VUCR-1R may be resulting in migration of the COC plume northwesterly toward the V-Lagoon area and pumping may be reduced or halted in the future to avoid this issue. A second low concentration COC plume in the Upper Citronelle Aquifer located at the southeastern corner of the T-Lagoon, which is sourced from the same former drum storage location discussed in the Alluvial Aquifer discussion above, is also monitored.

Ten widely spaced recovery wells (LCRW-1, LCRW-2, LCRW-3, LCRW-4, LCRW-5, LCRW-6, LCRW-7, LCRW-8, LCRW-9 and LCRW-10; MW-123 was converted to a recovery well in August 2015 and designated LCRW-10) and 34 monitoring wells are currently in existence in the Lower Citronelle Aquifer. Both monitoring and recovery wells in the Lower Citronelle Aquifer are more spread out due to a lower concentration but larger and more elongated shape COC plume within this aquifer. The COC plume in this aquifer appears to be sourced from within and just to the east of the Formal area, and it extends both to the northeast off-site and northwest toward and beyond the former V-Lagoon.

Four monitoring wells are located within the unaffected Graham Ferry Aquifer. One monitoring well is located up-gradient of and three down-gradient of the Formal area.

## 2.2 CURRENT MONITORING PROGRAM

Currently, all Site monitoring and recovery wells (179 total) are either sampled on a semi-annual basis (May and November; 111 wells) or every two years (every other November; 68 additional wells). Currently, there are 48 recovery and monitoring wells sampled on a semi-annual basis in the Alluvial Aquifer, 31 in the Upper Citronelle Aquifer, 32 in the Lower Citronelle Aquifer and none in the Graham Ferry Aquifer. Wells currently scheduled for sampling every two years include 34 in the Alluvial Aquifer, 18 in the Upper Citronelle Aquifer, 12 in the Lower Citronelle Aquifer and four in the Graham Ferry Aquifer.

The current sampling frequency of all Site monitoring wells is indicated on Tables 1, 2, 3 and 4. A summary data table of historical COC sampling results (2004 through 2014) is presented in Appendix B.

### 2.2.1 Sample Analyses

The groundwater samples are analyzed by TestAmerica Laboratories, Inc. of Pensacola, Florida using EPA-approved SW-846 methods. Sample analysis includes select Site VOCs by EPA Method 8260C (except 2-chloroethanol), 2-chloroethanol (Ethylene Chlorohydrin; EPA Method 8015B; select wells) and semivolatile organic compounds (SVOCs) by EPA Method 8270D. All monitoring wells are currently sampled for select Site VOCs and SVOCs. Formal area wells and new wells installed since the last groundwater monitoring program update are also sampled for 2-chloroethanol.

As a result of the groundwater monitoring program optimization, future sampling of wells will include Site COCs (select VOCs, select SVOCs and 2-chloroethanol as needed), but unnecessary analyses at each wellhead have been eliminated based on the areal extent of each individual COC plume and relative well location. This has resulted in elimination of some VOC or SVOC analyses at select well locations. 2-Chloroethanol degrades rapidly and does not typically exist outside the Formal area, 2-chloroethanol analysis will be limited to Formal area wells in the future. Proposed laboratory analyses at each wellhead are presented in Tables 3 and 4.

### 2.2.2 Hazardous Waste Landfill Leak Detection Monitoring

Currently, Alluvial Aquifer monitoring wells MW-32, MW-33, MW-MW-34, WM-134 and MW-135 are permitted hazardous waste landfill leak detection monitoring wells. Each is monitored on a semi-annual basis for Site VOCs and SVOCs. Leak indicator parameters required to be monitored under the landfill permit are phenol, toluene and aniline. These wells are typically non-detect for these parameters, but sampling will continue in the future on

a semi-annual basis as per permit conditions. This permit is up for renewal in 2017 and the groundwater monitoring program may be modified as presently noted in the permit.

Permit conditions also require that a composited sample of the 12 leachate collection sumps be collected and analyzed at least once every two years, with the results used to determine if the leak indicator parameters for groundwater remain valid. This sampling will continue as per permit conditions.

### 2.2.3 Landfill Leachate Volume and Trend Analysis

There are 12 sumps associated with the six cells of the closed landfill located on-site. Six of these sumps are termed “leachate collection sumps” (MH-1, MH-3, MH-6, MH-8, MH-10, and MH-12) and collect leachate from landfill materials just above the upper liner beneath the landfill. The remaining six sumps are termed “leak detection sumps” (MH-2, MH-4, MH-5, MH-7, MH-9 and MH-11) which drain a sand layer positioned between the upper and lower landfill liners. The bottom landfill liner rests on a 2-foot layer of clay. All sumps are inspected on a daily basis (Monday through Friday) and any accumulated liquids are removed when the level of the liquid in each sump comes within one foot of the bottom of the inlet pipe from the landfill. In accordance with permit conditions, the removed liquid is pumped to a 90-day storage tank and managed as required by RCRA regulations.

While there is no action level for leachate originating from the six leachate collection sumps, there is an action level for the volume originating from the six leak detection sumps. This action level for the leak detection sumps is an accumulation rate (from all six leak detection sumps combined) in excess of 45 gallons per day (gpd) for a period of 90 days or more. As per permit conditions, the leachate volumes and rates of collection will continue to be closely monitored and reported.

### 2.2.4 Groundwater Recovery Operations

As mentioned above, there are currently 29 recovery wells in operation at the Site. Removal volumes as a whole have generally been maintained at or well above normal target levels (53 gallons per minute, gpm or 76,320 gpd, based on capture requirements determined by groundwater modeling). This has been due to diligent maintenance work, treatment system improvements and the increase of several recovery well pumping rates. The groundwater monitoring reports list the estimated total daily recovery system flow volumes for the most recent two reporting periods. A recovery pump and treatment system maintenance and down-time summary log documenting system down-time and repair history is also provided. This information will continue to be provided in future groundwater monitoring reports.

Estimates of the amount (mass) of select primary COCs [1,2-Dichloroethane, 2-Chloroethanol, 1,4-Dioxane, bis(2-Chloroethoxy)methane and bis(2-Chloroethyl)ether] removed from the subsurface by the Site pump and treat remediation system have been calculated and provided as part of previous groundwater monitoring reports. Estimates have been determined for each individual pumping well and for the Alluvial, Upper Citronelle, and Lower Citronelle Aquifers as a whole. This information will continue to be provided in future

groundwater monitoring reports, along with a cumulative estimate of the total COC removal masses from each aquifer since June 2008, when pumping began in the Lower Citronelle Aquifer.

### 2.2.5 Reporting

Currently, full groundwater monitoring reports with all figures, tables and appendices are compiled and submitted to regulatory agencies on a semi-annual basis. With changes to the groundwater monitoring program proposed within this document, modifications to the reporting scheme are warranted. In the future, Rohm and Haas proposes to submit one annual comprehensive groundwater monitoring report similar to what is already provided each year. The annual comprehensive report would include Mann-Kendall statistical trend analyses, removal mass estimates and all tables, figures and appendices that are currently provided.

## 2.3 MANN-KENDALL STATISTICAL ANALYSES

Mann-Kendall statistical trend analyses are currently performed for select COCs at select monitoring/recovery well locations as described in detail in the Semi-Annual Groundwater Monitoring Reports. COC's currently include 1,1-DCA, 1,1-DCA, 1,2-DCA, 2-chloroethanol, BCEM and BCEE. Analyses are conducted on a select subset of higher concentration or otherwise strategically located wells for each parameter in which there are detections. Selected wells vary by parameter but typically include recovery wells, higher concentration monitoring wells, and COC plume edge and perimeter wells (capture zone evaluation performance and sentinel wells). Mann-Kendall statistical analyses will continue to be performed as part of future monitoring events.

Wells typically used for Mann-Kendall trend analyses in the Alluvial Aquifer vary by parameter, but generally include:

- Higher concentration wells ARW-1, ARW-2, ARW-3, ARW-4, ARW-5, TAR-3, TAR-4, MW-1, MW-36, MW-55, MW-133, TAP-4 and VAP-4.
- Perimeter/capture zone performance wells MW-8, MW-86 and MW-103.
- Perimeter/capture zone sentinel wells MW-93, MW-94 and MW-105.
- Recovery wells TAR-1, TAR-2, VAR-1, VAR-2 and VAR-3 have been added where possible.

Wells typically used for Mann-Kendall trend analyses in the Upper Citronelle Aquifer varied by parameter, but include:

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## SECTION TWO

## Current Monitoring Program

- Higher concentration wells UCRW-1, UCRW-2, UCRW-3, UCRW-4, UCRW-5, VUCR-1R, MW-27R, MW-30, MW-31, MW-35, MW-37, MW-63, MW-70, MW-95, MW-144 and VUCP-1.
- Perimeter/capture zone performance wells MW-62, MW-67, MW-96 and MW-138.

Wells typically used for Mann-Kendall trend analyses in the Lower Citronelle Aquifer vary by parameter, but include:

- Original higher concentration wells LCRW-1, LCRW-2, LCRW-3, LCRW-4, LCRW-5, LCRW-6, LCRW-7, LCRW-8, LCRW-9 and MW-114.
- Perimeter/capture zone performance wells LCRW-10 (formerly MW-123), MW-99, MW-101, MW-113, MW-115, MW-141, MW-142 and MW-143.

For the purposes of this groundwater monitoring plan optimization and update, concentration trend analysis using Mann-Kendall statistical procedures was conducted on all wells for a limited number of primary COCs for each of the four aquifers. Parsons utilized the USEPA-approved Air Force Center for Engineering and the Environment (AFCEE) Monitoring and Remediation Optimization Software (MAROS, Version 2.2) and data in the current Site database for the Mann-Kendall trend analysis. The Site database includes data from sampling events conducted between November 2004 and November 2014. Parameters selected for Mann-Kendall trend analysis included 1,2,3-TCP, 1,2-DCA, BCEM, BCEE and 1,4-dioxane. 2-Chloroethanol was also considered, but it degrades very quickly and does not exist beyond the former Formal area and its immediate vicinity. The parameters were limited to five compounds due to limitations of the MAROS software package. However, the COCs chosen include the major components of DNAPL plume that have been observed in the Formal area (1,2,3-TCP, 1,2-DCA and BCEM), a primary risk driver (BCEE) and 1,4-dioxane, which may be one of the more recalcitrant COCs.

Appendix C includes detailed MAROS program Mann-Kendall statistical analysis summary information and output from November 2004 through November 2014. Table 2 summarizes the results of the Mann-Kendall trend analysis. Trend results are presented as stable, increasing, probably increasing, decreasing, probably decreasing, or no trend. A confidence in the trend prediction expressed as a percentage is given, as well as a determination of whether or not the trend is significant. These summaries include time-concentration graphs for each well and parameter tested.

A general discussion of observed data trends in the selected wells between November 2004 and November 2014 is given below by aquifer.

### 3.1 ALLUVIAL AQUIFER

A review of Table 2 and the historical summary COC concentration data in Appendix B indicates that most wells in the Alluvial Aquifer have decreasing, stable or fluctuating (no trend) concentrations. Only ten of the 82 Alluvial Aquifer wells had increasing or probably increasing trends (Formal area recovery wells ARW-3 and ARW-5, MW-6 and MW-26 located east of the V-Lagoon, MW-36 in the Formal area, LAP-4 at the northeast corner of the closed industrial waste landfill, MW-58 west of the V-Lagoon, MW-93 located south/southeast of the Formal area, V-Lagoon recovery well VAR-1 and T-Lagoon area recovery well TAR-4. 1,2,3-TCP and BCEE were not found to be trending higher in any of the wells. Of particular note are the general decreasing trends of some primary COCs in recovery wells ARW-1 (1,2,3-TCP, 1,2-DCA, 1,1-DCA, BCEM and BCEE), ARW-2 (1,2-DCA, BCEM and BCEE), ARW-3 (1,2,3-TCP, 1,2-DCA, BCEE) and ARW-4 (1,2,3-TCP, 1,2-DCA, BCEM and BCEE) in the Formal area, and monitoring wells MW-86 (1,2,3-TCP, 1,2-DCA, 1,4-dioxane and BCEM) and MW-103 (1,2-DCA and BCEM). MW-86 and MW-103 are immediately south of the Formal area (across Elder Ferry Road), in what would be down-gradient positions if not for the action of the groundwater recovery/remediation system. Long-term general concentration declines in these two wells are an indication that the

groundwater recovery/remediation system has been effective in capturing the COC plume in the Formal area. This may be accentuated in the future given the achievement of sustained pumping rates at or above targeted levels over the last four years and potential additional remedial efforts.

### 3.2 UPPER CITRONELLE AQUIFER

A general review of the Upper Citronelle trends presented in Table 2 indicates generally decreasing, stable or fluctuating concentrations for the selected COCs. Increasing trends were limited to only eight of the 49 monitoring wells present in the Upper Citronelle Aquifer, and were generally limited to the vicinity of UCRW-2 (Formal area; BCEM only), UCRW-3 (Formal area; BCEM only), V-Lagoon area recovery well VUCR-1R (1,4-dioxane), MW-31 (northwest of Formal area; BCEM, BCEE and 1,4-dioxane), MW-35 (north of Formal area; BCEM and BCEE), MW-67 (west of V-Lagoon; BCEE), MW-132 (North Woods; BCEM, but non-detect for 3 consecutive monitoring events) and MW-138 (north of V-Lagoon; 1,4-dioxane).

### 3.3 LOWER CITRONELLE AQUIFER

A general review of the Lower Citronelle trends presented in Table 2 indicates a predominance of decreasing, stable or fluctuating trends. Increasing or probably increasing trends were limited to nine of the 44 Lower Citronelle recovery and monitoring wells. These included LCRW-3 (V-Lagoon area; 1,4-dioxane), LCRW-4 (south of T-Lagoon; 1,2-DCA and BCEE), LCRW-5 (Formal area; 1,2-DCA and BCEM), MW-45 (south of V-Lagoon; 1,2-DCA), MW-92 (immediately adjacent to LCRW-8 and redundant; 1,4-dioxane), MW-101 (northwest of V-Lagoon; 1,4-dioxane), MW-115 (immediately adjacent to LCRW-7 and redundant; 1,2-DCA), MW-142 (northeastern perimeter; 1,4-dioxane) and MW-143 (northeastern-most perimeter; BCEM and BCEE). With the exception of MW-45, MW-101, MW-142 and MW-143, observed increasing trends were limited to recovery wells and monitoring wells in close proximity to recovery wells. Generally decreasing or probably decreasing concentrations were observed on the western perimeter of the BCEM plume (MW-101, LCRW-2 and LCRW-3); decreasing or stable concentrations were observed in northeastern perimeter monitoring wells MW-141 and MW-142; decreasing concentrations were observed in easternmost recovery well LCRW-9; and fluctuating or decreasing trends were observed south of the BCEM plume adjacent to the river (MW-99 and MW-113). The trend in the northeastern-most monitoring well MW-143 appears to be increasing for now, though increased recovery efforts in this area may affect this well in the future, particularly now that conversion of nearby monitoring well MW-123 into a recovery well (LCRW-10) has been completed and is currently pumping at around 8 gpm.

Groundwater monitoring of the Site has been occurring since the 1980s. The current electronic groundwater monitoring database dates back to 2004 and has 12 years of comprehensive data available for review, interpretation and statistical analysis. As mentioned above, there are 179 recovery and monitoring wells in existence at the Site, most of which have been sampled for many years and have long established and predictable concentration trends. Although many are in excellent and strategic locations, some are located in locations that are no longer useful for monitoring purposes. Some wells are clustered too closely together and provide overlapping and unnecessary data. Others have had recovery wells installed in adjacent positions, but both are unnecessarily sampled. Additionally, numerous monitoring wells and recovery wells have been installed since 2005 when the groundwater monitoring program was last evaluated and tailored to Site needs.

For the reasons above, a comprehensive evaluation of the Site groundwater monitoring program has been performed by both Parsons and Earthcon. Evaluations were conducted independently at first for comparison purposes, which yielded very similar outcomes, and then again collaboratively, to ensure that site specific considerations were taken into account for the final Earthcon analysis. The purposes were to evaluate its scope, make sure it meets current Site requirements and objectives, and to tailor it for future Site conditions and needs. Parsons utilized extensive Site knowledge and experience in a manual well by well evaluation, utilizing criteria discussed in Section 4.1 below, to evaluate each individual well within the groundwater monitoring program. Parsons determinations were made based on data trends, as to whether or not a monitoring or recovery well should remain part of the overall sampling program and if so, what sampling frequency and analyses types would be appropriate for future monitoring.

A separate monitoring program evaluation using a RMWSA™ was performed by Earthcon. The RMWSA™ is a statistical method to determine when a monitoring well system can be reduced. The RMWSA™ first requires the completion of a Ricker Method® plume stability analysis. As described in *A Practical Method to Evaluate Ground Water Contaminant Plume Stability* (Ricker, 2008), the Ricker Method® plume stability analysis uses time-series groundwater analytical data to compare relative changes in contaminant plume characteristics including area, average concentration and mass indicator. Note that the term “mass indicator” does not necessarily represent the entire mass in the subsurface, but rather an expression of it based on a fixed assumption of aquifer thickness and porosity. In order to evaluate the stability of a plume, temporal trends are calculated on each of these plume characteristics, using linear regression and Mann-Kendall, to determine if the plume is increasing, stable or decreasing.

The RMWSA™ uses the plume stability characteristics of area, average concentration and mass indicator from the entire network as a baseline to compare the respective plume stability characteristics from an optimized network. These comparisons are made for each of the plume stability characteristics using Mann-Kendall trend, linear regression trend, average relative percent difference and correlation coefficient. The optimized network is then assigned an overall strength based on the results of those comparisons made in each of the

plume stability characteristics, using the RMWSA™ Argument Matrix. If the strength of the optimized network is deemed unacceptable, modifications are made to the optimized network and the new optimized network is analyzed and scored until an acceptable strength achieved. An optimized network with a strong or very strong argument should provide adequate data from additional monitoring to accurately assess the stability of a groundwater contaminant plume using the Ricker Method® plume stability analysis.

Both the Earthcon and Parsons methodologies produced remarkably similar results. The overall results presented in this report and its tables and figures represent a collaboration and consensus between the two methods. The results of which are presented in Appendix A.

The overall groundwater monitoring program evaluation has been summarized in Tables 3 (specific trends) and 4 (general trends and other criteria). These tables show both the current and proposed sampling schedules/analyses for each monitoring and recovery well, and reflect a consensus/collaboration agreement between Parsons and Earthcon. Proposed new monitoring schedules are color coded for ease of review. A general summary of the current and proposed sampling programs related to number of wells and samples per two year period is presented in Table 5. The proposed new sampling schedules are also presented for each aquifer on Figures 3 (Alluvial), 4 (Upper Citronelle), 5 (Lower Citronelle) and 6 (Graham Ferry). An overall sampling program for all aquifers combined is provided as Figure 7. All figures have well symbols which show both the current and proposed new sampling schedule and are useful and intuitive to understand the proposed sampling program at a glance.

#### 4.1 CRITERIA FOR THE EVALUATION OF MONITORING WELLS

Several criteria were used to evaluate whether or not a monitoring or recovery well should remain part of the overall sampling program and what frequency would be appropriate for each well. Criteria included; location of each well, use of each well, previous sampling history of each well, Mann-Kendall statistical trend analyses, whether or not other nearby monitoring wells were better positioned for monitoring needs and the results of the RMWSA™. The details of the criteria utilized in the sampling plan optimization analysis were as follows:

- Mann-Kendall statistical trend analyses were performed for five primary COCs (1,2,3-TCP, 1,2-DCA, BCEM, BCEE and 1,4-dioxane) on available sampling data up to and including the November 2014 sampling event. Overall COC trends were considered as a very important part of this evaluation. Wells with substantial concentrations that had overall increasing trends were retained on an annual schedule to ensure COC concentrations in such wells were closely monitored. Depending on location and sensitivity, monitoring wells with long-standing established stable, decreasing or non-detect trends were considered for less frequent sampling schedules. Mann-Kendall analytical trends in a few monitoring wells indicated increasing or probably increasing

concentrations, but had only minimal concentrations or sporadic detections. These wells were also considered for less frequent sampling schedules.

- Hazardous waste landfill leak detection monitoring wells were retained on a semi-annual monitoring schedule as per permit requirements. These included MW-32, MW-33, MW-34, MW-134 and MW-135.
- Actively pumping recovery wells were retained on an annual sampling schedule. These wells have been sampled many times and have very predictable concentrations over time. A semi-annual sampling schedule is no longer warranted for these wells at this time. Retaining these wells on the annual schedule will allow adequate monitoring of concentrations and will ensure that recovery operations will be closely monitored and removal masses to be estimated over time. However, if active pumping from a recovery well is terminated in the future, sampling will also be terminated as appropriate. UCRW-1 and LCRW-8 have been shut down for several years and have been treated as monitoring wells in this evaluation. V-Lagoon recovery wells VAR-1, VAR-2 and VAR-3 (Alluvial Aquifer) are contributing minimally to COC plume remediation or containment and are proposed for termination. In addition, remedial activity for the low concentration COC plume southeast of the T-Lagoon is being considered. When this remedial action is performed, T-Lagoon recovery wells TAR-1, TAR-2, TAR-3 and TAR-4 will be shut down and sampling terminated.
- Capture zone evaluation wells (Performance and Sentinel wells) were retained on either an annual sampling schedule (most critical locations) or every two year schedule (less critical locations). Continued sampling of these wells on either an annual or every two-year basis will allow the capture zone evaluations to proceed unheeded. These include selected wells within the edge and perimeter of the BCEM plume in strategic locations that are helpful for determination of the effectiveness of recovery operations.
- Overall COC concentrations were considered. Higher concentration wells were generally given a higher sampling priority, depending on the location of the well, the vicinity of nearby wells, concentration trends within it, etc.
- Strategic location of each monitoring well was considered very important during the sampling program evaluation. COC plume edge wells and the closest perimeter monitoring wells beyond the plume were given more weight than interior plume wells with predictable stable or decreasing concentrations. Wells in the direction of COC plume movement were given particularly high priority and retained on an annual schedule, depending on well location and COC concentrations. Some wells were located too far away from COC plumes or source areas to be effective at monitoring anything and were considered for termination. Others were in sensitive locations such as property lines, neighboring properties or near the Escatawpa River and were therefore retained.

- Vicinity of nearby monitoring or recovery wells was given considerable weight in this evaluation because of the large number of wells located at the Site. In many cases, recovery wells were installed immediately adjacent to or very nearby existing monitoring wells, negating the need for sampling the original monitoring well. In other instances, there were numerous other monitoring wells located in a given area, without need for all. In still other instances, there were wells located closer in toward a COC plume but still on the perimeter that were more appropriate or necessary than other non-detect or very low concentration wells further out. Such wells further out than necessary, with more ideal wells closer in toward a plume, were recommended for a lower sampling frequency or termination of sampling. In such cases, termination was recommended to be contingent on continued stable or decreasing trend or very low concentration of the well closer in. In these instances, sampling could be resumed at a later date if deemed warranted.
- Wells meeting more than one evaluation criteria noted above were considered progressively higher candidates for reduction of sampling frequency.
- Collaboration and consensus with the results of the RMWSA™ was also considered and included. There were only a handful of wells where differences occurred. Notes were added to the comments column of Tables 3 and 4 where changes were made to the proposed new monitoring program based on Earthcon's evaluation and input. Changes were minimal and included the inclusion or termination of some monitoring wells and changes to analytical requirements. Tables and Figures reflect the consensus between the evaluations.
- Each individual monitoring well was evaluated in relation to all COC plumes. In some cases, tailoring of required laboratory analysis was evaluated at select wells. In some instances, either VOCs, SVOCs or 2-chloroethanol were proposed for elimination where data for a subset of COC data were determined to be unnecessary. For instance, 2-chloroethanol exists almost exclusively in the Formal area, so analysis of it has been proposed to be limited to the Formal area and adjacent up-gradient and down-gradient locations. Similar determinations were made in relation to VOC and SVOC plumes.

## 4.2 ALLUVIAL AQUIFER EVALUATION

The Alluvial Aquifer has by far the most monitoring and recovery wells (82). Monitoring wells are currently intended to monitor two separate COC plumes and the perimeters of three permitted waste facilities including the closed former V-Lagoon, the closed former T-Lagoon and the closed hazardous waste landfill (Figure 3). The Site groundwater COC plumes are not generally associated with the closed waste facilities, and their surrounding monitoring wells are mostly clean except in regard to the two primary COC plumes which are associated primarily with other areas/former activities. The primary Site COC plume is located in and surrounding the former Formal area. The Formal area COC plume stretches from the former

Formal area southward to the Escatawpa River and northward to the V-Lagoon (shown in yellow contours on Figure 3). By far the highest concentrations are located within the former Formal area, where DNAPL had been observed during the recent Phase I, II, III and IV Additional CSM Investigations. A much smaller and lower concentration plume (trace level in comparison to the Formal area) is located southeast of the T-Lagoon and is associated with former drum storage activity rather than the T-Lagoon.

There are currently 12 recovery wells and 70 monitoring wells within the Alluvial Aquifer, including five permitted hazardous waste landfill leak detection wells. Recovery wells are located in the Formal area (ARW-1, ARW-2, ARW-3, ARW-4 and ARW-5), the closed T-Lagoon area (TAR-1, TAR-2, TAR-3 and TAR-4) and the closed V-Lagoon area (VAR-1, VAR-2 and VAR-3). Most Site contamination is located within the Formal area at the southern portion of the Site and by far the most mass removal is taking place there. A much smaller and lower concentration VOC plume associated with a former drum storage area is located in the northern area of the Site at the southeast corner of the T-Lagoon. Alluvial Aquifer monitoring and recovery wells are focused on these areas and the former V-Lagoon, which no longer appears to be a significant on-going source.

Using the criteria discussed above in Section 4.1, the monitoring well network was evaluated with regard to current Site requirements and needs. Monitoring and recovery wells were classified for sampling on a semi-annual, annual or every two years basis, or recommended for termination of sampling if the well appeared to be no longer needed. This evaluation is summarized below and in Tables 3 and 4 and Figure 3, which indicate both current and proposed sampling schedules.

#### Semi-Annual

As per current permit conditions, all five permitted hazardous waste landfill leak detection wells (MW-32, MW-33, MW-34, MW-134 and MW-135; color coded as red in Tables 3 and 4 and purple on Figure 3) will remain on a semi-annual sampling schedule.

#### Annual

Monitoring and recovery wells recommended for an annual sampling status have had their proposed new monitoring status highlighted in orange in Tables 3 and 4. They are also color coded as appropriate (yellow) on Figure 3.

All Formal area recovery wells (ARW-1, ARW-2, ARW-3, ARW-4 and ARW-5) and T-Lagoon area recovery wells (TAR-1, TAR-2, TAR-3 and TAR-4) have been recommended for annual monitoring due to their long history of sampling and predictable overall trends. However, V-Lagoon area recovery wells (VAR-1, VAR-2 and VAR-3) currently serve no real purpose (located outside of the primary COC plume) and are in bad physical condition. They may also be acting to pull the primary COC plume in a northwesterly direction toward the V-Lagoon. They are, therefore, recommended to be shut down, have their sampling terminated

and prepared for proper abandonment. The T-Lagoon recovery wells will continue to be operated and be sampled on an annual basis until such time as they are shutdown as part of an upcoming remedial action implementation plan. Proper abandonment will then be performed. Nearby monitoring wells (TAP-1, TAP-2, TAP-3, TAP-4, TAP-5, MW-1, MW-4 and MW-50) will be sampled in their place until the success of the remedy has been verified, and then these wells will be terminated and abandoned as well.

Alluvial Aquifer monitoring wells which were previously on a semi-annual schedule are proposed to be sampled on an annual schedule instead (except the five permitted hazardous waste landfill leak detection wells), unless they were determined to require less frequent sampling (biennial) or were deemed unnecessary. Overall, the proposed annual schedule will include all Alluvial Aquifer recovery wells, capture zone performance and sentinel wells (typically COC plume edge and perimeter wells in the direction of groundwater flow); any monitoring well currently showing significantly increasing trends; wells which were determined to have stable or decreasing concentration trends but were deemed to be in important areas such as within or along the edge of COC plumes; and those in the direction of groundwater movement and in the pathway of a COC plume. This recommendation was based on the large amount of existing and predictable data and predominantly stable or decreasing concentration trends.

Some of the more important Alluvial Aquifer monitoring wells placed on the annual sampling list include key capture zone performance wells MW-86 (south of the Formal area) and MW-103 (south of the Formal area); capture zone sentinel wells MW-93 (south of the Formal area), MW-94 (south of the Formal area at the Escatawpa River) and MW-105 (south of the Formal area at the Escatawpa River); and Formal area monitoring well MW-36, which has substantial concentrations and apparent increasing concentrations of 1,2-DCA and 1,4-dioxane.

The overall proposed total for sampling on an annual schedule includes nine recovery wells and 18 monitoring wells (27 altogether). There are no wells currently on an annual sampling schedule (Tables 3, 4 and 5).

#### Biennial

Monitoring and recovery wells recommended for an every two year sampling status have had their proposed new monitoring status highlighted in green in Tables 3 and 4. They are also color coded as appropriate (green) on Figure 3.

Alluvial Aquifer monitoring wells having non-detect or very low level concentrations, stable or decreasing concentration trends and locations in less critical areas such as along the perimeter of COC plumes but not in the direction of groundwater movement, were recommended for sampling on an every two year schedule. Many such wells were already on an every two year sampling schedule for similar reasons and were recommended to remain there unless they were no longer necessary. Wells deemed no longer necessary were recommended for termination. Fourteen Alluvial Aquifer monitoring wells which were

already on an every two year sampling basis were recommended to remain on that schedule (Tables 3 and 4). Two wells (MW-50 and MW-51), which were on a semi-annual sampling status and located far east of the T-Lagoon area and not deemed to be in critical areas, were recommended for an every two year status.

Altogether, 16 monitoring wells are recommended for sampling every two years on the proposed new sampling program, compared to 34 at the current time under the current sampling program (Tables 3, 4 and 5).

#### Termination

In cases where wells were no longer deemed necessary or useful, they were recommended to have sampling terminated at this time (Tables 3, 4 and 5). In some cases, this termination was recommended to be permanent and in other cases, it is contingent on other monitoring wells closer to COC plumes remaining stable, decreasing or non-detect. Altogether, three recovery wells (VAR-1, VAR-2 and VAR-3) and 31 monitoring wells screened within the Alluvial Aquifer were determined to no longer be useful or necessary, and have been recommended to be removed from the proposed new sampling program. As mentioned above, V-Lagoon recovery wells no longer serve a purpose and may actually be pulling the COC plume toward the northwest. They are also in poor physical condition and are recommended to be shut down and properly abandoned. Of the 34 total wells recommended for termination of sampling, 13 are currently being sampled on a semi-annual basis with the remaining ones on an every two year basis. MW-3, MW-9, MW-10, MW-17 and MW-19 were all determined to be unnecessary by the RMWSA™ performed by Earthcon and added to the termination list.

The proposed new sampling schedule for wells recommended for termination are shaded in purple in Tables 3 and 4 and indicated with X's on Figure 3 and 7.

### 4.3 UPPER CITRONELLE AQUIFER EVALUATION

There are currently six recovery wells [five in or near the Formal area (UCRW-1, UCW-2, UCRW-3, UCRW-4 and UCRW-5) and one at the former V-Lagoon (VUCR-1R)] and 43 monitoring wells in the Upper Citronelle Aquifer. The recovery and monitoring wells are focused on monitoring and controlling the extent and concentrations of a COC plume centering on the Formal area and extending northwestward into the V-Lagoon area and southeastward toward the Escatawpa River (Figure 4). Migration of COCs toward the River has been successfully controlled and the numerous monitoring wells provide a more than necessary monitoring well network. Pumping from recovery well VUCR-1R may be resulting in migration of the COC plume northwesterly toward the V-Lagoon area and pumping may be reduced or halted in the future to avoid this issue. A second low concentration COC plume in the Upper Citronelle Aquifer located at the southeastern corner of the T-Lagoon, which is sourced from the same former drum storage location as the Alluvial plume in the same area, is also monitored.

Upper Citronelle Aquifer recovery and monitoring wells are focused on recovery operations and monitoring in the Formal area and V-Lagoon area, but other areas including the former T-Lagoon and former North Woods area (remedial action already completed) also have monitoring well coverage. Using the criteria discussed in Section 4.1, the monitoring well network of the Upper Citronelle Aquifer was evaluated with regard to current Site requirement and needs. Monitoring and recovery wells were classified for sampling on an annual or every two year basis, or recommended for termination of sampling if the well appeared to be no longer needed. This evaluation is summarized below and in Tables 3 and 4 and on Figure 4, which indicate both current and proposed new sampling schedules.

#### Annual

Monitoring and recovery wells recommended for an annual sampling status have had their proposed new monitoring status highlighted in orange in Tables 3 and 4. They are also color coded as appropriate (yellow) on Figure 4.

All Upper Citronelle Formal area recovery wells (UCRW-1, UCRW-2, UCRW-3, UCRW-4 and UCRW-5) and V-Lagoon area recovery well VUCR-1R have been recommended for annual monitoring due to their long history of sampling and predictable overall trends. However, VUCR-1R may be acting to pull the primary COC plume in a northwesterly direction toward the V-Lagoon. After further evaluation (not yet completed), it may in the future be recommended for a reduction in pumping or shut down.

In addition to the recovery wells, Upper Citronelle Aquifer monitoring wells included on the annual sampling schedule included those that are capture zone performance and sentinel wells deemed to be in critical locations (typically COC plume edge and perimeter wells in the direction of groundwater flow), any monitoring well showing significant increasing trends, wells which were determined to have stable or decreasing concentration trends and deemed to be in important areas such as within or along the edge of COC plumes, and those in the direction of groundwater movement and in the pathway of a COC plume. This recommendation was based on the large amount of existing and predictable data and predominantly stable or decreasing concentration trends.

Some of the more critical Upper Citronelle monitoring wells included for annual monitoring included capture zone performance wells MW-62 (eastern edge of the BCEM plume), MW-96 (south of the Formal area) and MW-138 (north of the V-Lagoon); capture zone sentinel well MW-69 (north edge of the BCEM plume); and monitoring wells MW-31 (northwest of the Formal area) which has substantial concentrations and apparent increasing concentrations of 1,4-dioxane, BCEM and BCEE; MW-35 (BCEM plume well east of the V-Lagoon and north of the Formal area) which has apparent increasing concentrations of BCEM and BCEE, and MW-144 (new Formal area well) which has the highest concentrations of COCs in the Upper Citronelle Aquifer.

The 10 other monitoring wells proposed for annual monitoring include MW-23 (BCEM plume well north of the V-Lagoon), MW-27R (V-Lagoon area BCEM plume well), MW-63

(just east of UCRW-5 and a BCEM plume perimeter well), MW-67 (less important capture zone performance well in the western BCEM plume area), MW-68 (northwest BCEM plume edge well), MW-78 (less important capture zone sentinel well south of the Formal area at the Escatawpa River), MW-95 (northeast BCEM plume edge well), MW-97 (less important capture zone sentinel well south of the Formal area at the Escatawpa River), MW-110 (easternmost BCEM plume perimeter well) and MW-125 (T-Lagoon area plume perimeter well).

The overall proposed total for sampling on an annual schedule includes six recovery wells and seventeen monitoring wells (23 altogether). There are no wells currently on an annual sampling schedule (Tables 3, 4 and 5).

#### Biennial

Monitoring and recovery wells recommended for an every two year sampling status have had their proposed new monitoring status highlighted in green in Tables 3 and 4. They are also color coded as appropriate (green) on Figure 4.

Upper Citronelle Aquifer monitoring wells having non-detect or very low level concentrations, stable or decreasing concentration trends, and located in less critical areas such as along the perimeter of COC plumes but not in the direction of groundwater movement were recommended for sampling on an every two year basis. Many such wells were already on an every two year sampling schedule for similar reasons and were recommended to remain there unless they were no longer necessary. Wells deemed no longer necessary were recommended for termination. Thirteen Upper Citronelle Aquifer monitoring wells (all already on an every two year sampling basis except MW-28, MW-64, MW-70 and MW-111) were recommended to remain on that basis. MW-28 is a redundant well located adjacent to and just north of UCRW-1. It was determined unnecessary by Parsons, but the RMWSA™ performed by Earthcon recommended retaining it. MW-64 is an interior BCEM plume well located just west of UCRW-4 and sampling every 2 years appears sufficient. MW-70 is a stable well southeast of the T-Lagoon and sampling every two years like other T-Lagoon wells appears to be sufficient. MW-81 is located too far north and west to monitor a plume and was recommended for termination by Parsons. However, the RMWSA™ performed by Earthcon recommended sampling for VOCs. MW-111 (T-Lagoon area plume perimeter well) is located far east of the T-Lagoon area COC plume and has consistently been non-detect.

The 13 proposed wells to be retained on the every other year schedule compares to 18 such wells under the current sampling program (Tables 3, 4 and 5).

#### Termination

In cases where wells were no longer deemed necessary or useful, they were recommended to have sampling terminated at this time. In some cases, this termination was recommended to be permanent and in other cases, it is contingent on other monitoring wells closer to COC

plumes remaining stable, decreasing or non-detect. Altogether, 13 monitoring wells screened within the Upper Citronelle Alluvial Aquifer were determined to no longer be useful or necessary, and have been recommended to be removed from the proposed new sampling program. As mentioned above, V-Lagoon recovery well VUCR-1R may be shut down in the future as well due to the possibility that it may actually be pulling the COC plume toward the northwest. Of the 13 wells recommended for termination of sampling, four are currently being sampled on a semi-annual basis (MW-65, MW-79, MW-126 and MW-132), with the remaining ones on an every two year basis. Upper Citronelle wells proposed for termination generally consisted of wells in unnecessary locations (MW-61; far northeast of the Site not near any COC plume and MW-132; North Woods area where remediation is complete), wells too far away from the BCEM plume for effective monitoring and have more appropriate wells located closer to COC plumes (MW-18, MW-65, MW-66, MW-77, MW-79, MW-80, MW-90, MW-112 and MW-126), a well in a duplicate locations MW-41; very near VUCP-1) and a well located across the Escatawpa River (MW-124) for which access is no longer available. MW-18, MW-65 and MW-79 were all recommended for termination by the RMWSA™ performed by Earthcon and added to the proposed termination list.

The proposed new sampling schedule for wells recommended for termination are shaded in purple in Tables 3 and 4 and indicated with X's on Figures 4 and 7.

#### 4.4 LOWER CITRONELLE AQUIFER EVALUATION

Ten widely spaced recovery wells (LCRW-1, LCRW-2, LCRW-3, LCRW-4, LCRW-5, LCRW-6, LCRW-7, LCRW-8, LCRW-9 and LCRW-10; MW-123 was just recently converted to a recovery well in August 2015 and re-designated LCRW-10) and 34 monitoring wells are currently in existence in the Lower Citronelle Aquifer. Both monitoring and recovery wells in the Lower Citronelle Aquifer are more spread out due to a lower concentration but larger and more elongated shape COC plume within this aquifer. The COC plume in this aquifer appears to be sourced from within and just to the east of the Formal area, and it extends both to the northeast off-site and northwest toward and beyond the former V-Lagoon. Recovery wells are designed to hold the plume in place and/or pull it back toward the Site. The conversion of MW-123 into a recovery well was completed to aid in this effort at the northeast perimeter of the BCEM plume. The monitoring well network is designed to monitor the extent and potential migration of the BCEM plume.

Using the criteria discussed above in Section 4.1, the monitoring well network of the Lower Citronelle Aquifer was evaluated with regard to current Site requirement and needs. Monitoring and recovery wells were classified for sampling on an annual or every two year basis, or recommended for termination of sampling if the well appeared to be no longer needed. This evaluation is summarized below and in Tables 3, 4 and 5, and Figure 5, which indicate both current and proposed new sampling schedules.

**Annual**

Monitoring and recovery wells recommended for an annual sampling status have had their proposed new monitoring status highlighted in orange in Tables 3 and 4. They are also color coded as appropriate (yellow) on Figure 5.

All Lower Citronelle recovery wells (LCRW-1 through LCRW-10) have been recommended for annual monitoring due to their long history of sampling and predictable overall trends.

In addition to the recovery wells, Lower Citronelle Aquifer monitoring wells included on the annual sampling schedule included capture zone performance and sentinel wells (typically COC plume edge and perimeter wells in the direction of groundwater flow) determined to be in critical locations, any monitoring well showing significant increasing trends, wells which were determined to have stable or decreasing concentration trends but deemed to be in critical areas such as within or along the edge of COC plumes, and those in the direction of groundwater movement and in the pathway of a COC plume. These recommendations were based on the large amount of existing data and predictable predominant stable or decreasing concentration trends.

Some of the more important Lower Citronelle Aquifer monitoring wells included on the annual sampling list included capture zone performance wells MW-46 (Adjacent to LCRW-3), MW-99 (BCEM plume well at the Escatawpa River), MW-101 (BCEM plume well northwest of the V-Lagoon), MW-113 (southeast BCEM plume edge well at the Escatawpa River), LCRW-10 (former eastern BCEM plume performance well MW-123 converted to a recovery well), MW-141 (northeastern BCEM plume edge) and MW-143 (northeast BCEM plume edge well).

Other wells on the annual sampling list include capture zone sentinel wells MW-84 (west of V-Lagoon), MW-98 (southwest BCEM plume perimeter at the Escatawpa River), MW-129 (southeast BCEM plume perimeter), MW-140 (northwest BCEM plume perimeter northwest of V-Lagoon) and MW-142 (northeast BCEM plume perimeter) and standard monitoring wells MW-102 (south edge of BCEM plume in the Formal area) and MW-114 (north BCEM plume edge well just north of LCRW-9).

The overall proposed total for sampling on an annual schedule includes ten recovery wells and 13 monitoring wells (23 altogether). There are no wells currently on an annual sampling schedule.

**Biennial**

Monitoring and recovery wells recommended for an every two year sampling status have had their proposed new monitoring status highlighted in green in Tables 3 and 4. They are also color coded as appropriate (green) on Figure 5.

Lower Citronelle Aquifer monitoring wells having non-detect or very low level concentrations, stable or decreasing concentration trends, and located in less critical areas such as along the perimeter of COC plumes but not in the direction of groundwater movement

were recommended for sampling on an every two year basis. Several such wells were already on an every two year sampling schedule for similar reasons and were recommended to remain there unless they were no longer necessary. Wells deemed no longer necessary were recommended for termination. Eight Lower Citronelle Aquifer monitoring wells (six already on an every two year sampling basis) were recommended to remain on that basis. Additionally, two wells currently on a semi-annual status (MW-128 and MW-130), located on the southwestern, southeastern and northern BCEM plume perimeter and not deemed to be in critical areas, were recommended for an every two year status.

Altogether, eight Lower Citronelle monitoring wells are proposed for sampling every two years. This compares to 12 under the current sampling program (Tables 3, 4 and 5).

#### Termination

In cases where wells were no longer deemed necessary or useful, they were recommended to have sampling terminated at this time. In some cases, this termination was recommended to be permanent and in other cases, it is contingent on other monitoring wells closer to COC plumes remaining stable, decreasing or non-detect. Altogether, thirteen monitoring wells screened within the Lower Citronelle Alluvial Aquifer were determined to no longer be useful or necessary, and have been recommended to be removed from the proposed new sampling program. Of the 13 wells recommended for termination of sampling, seven are currently being sampled on a semi-annual basis with the remaining ones on an every two year basis. Lower Citronelle wells proposed for termination generally consisted of wells in unnecessary locations (MW-21; southeast of the industrial waste landfill, MW-115; adjacent to LCRW-7 and MW-117; far west of the BCEM plume near MW-118), wells too far away from the BCEM plume for effective monitoring and have more appropriate wells located closer to the BCEM plume (MW-44, MW-45, MW-72, MW-82R, MW-91, MW-119, MW-131 and MW-139), a well in a duplicate location (MW-92; immediately adjacent to LCRW-8) and a well located across the Escatawpa River (MW-127) for which access is no longer available. MW-44, MW-45 and MW-115 were all determined to be unnecessary by the RMWSA™ performed by Earthcon and added to the termination list.

The proposed new sampling schedule for wells recommended for termination are shaded in purple in Tables 3 and 4 and indicated with X's on Figures 5 and 7.

#### 4.5 GRAHAM FERRY AQUIFER EVALUATION

There are currently four Graham Ferry monitoring wells, each of which is sampled every two years (Figure 6). Evaluation of these wells indicated that no change to their sampling status was warranted at this time. They will continue to be sampled on an every two year basis.

Methods and procedures followed during the groundwater monitoring events will be conducted in accordance with the GMP in the same general manner as before (previous GMP, June 11, 2005 edition). The only change will be to officially include a requirement for the detailed instrument calibration logs that have been maintained and included for several years already. The GMP was developed under the guidelines set forth in 40 CFR Subpart F Section 264 and *USEPA Region IV Environmental Investigations – Standard Operating Procedures and Quality Assurance Manual* (May 1996). These guidelines include procedures for sample collection, sample preservation and shipment, analytical procedures, chain-of-custody procedures, and schedules.

Field activities associated with monitoring events will remain the same and continue to consist of water level measurements, total well depth measurements, inspection of the integrity of monitoring well surface completions, monitoring well field parameter stabilization, field data record keeping and monitoring well sampling. Procedures for the completion of these tasks are presented below along with other pertinent field procedures such as quality assurance/quality control (QA/QC), decontamination, and management of investigation-derived waste (IDW).

## 5.1 WATER LEVEL MONITORING

Water level measurements will be taken to evaluate the seasonal variations in groundwater flow patterns. Water level measurements and potentiometric surface elevations for the monitoring events will be calculated with the most recent and accurate top of casing survey elevations and recorded on Table 1 of the groundwater monitoring reports.

During groundwater level monitoring activities, depths to water in each groundwater monitoring well (relative to the top-of-casing) will be obtained using an electronic water level indicator and recorded on field sampling log sheets. Protective caps will be removed from the wells in advance with sufficient time (at least one business day for flush-mount wells) to allow pressure equalization (most Site wells are stick-up type and are vented to allow continuous pressure equalization). Between each well, the water level indicator will be decontaminated with liquid Alconox<sup>®</sup> detergent and triple-rinsed with water. The depth-to-water measurements will be subtracted from the surveyed top-of-casing elevations to calculate the groundwater elevation in feet above mean sea level (MSL). Readings will also be taken at surface water gauging stations and calculations will be made from surveyed reference points to determine the surface water elevations. All wells will be inspected for any signs of deterioration or to note any item missing or in need of repair (*i.e.*, locks). Total depths of sampled monitoring wells are measured on an every other year basis in November during the full sampling events and will not be measured during the lesser sampling events to reduce the potential for inadvertent cross-contamination of the monitoring wells. Monitoring wells found to be in need of repair will be repaired as appropriate between sampling events.

**5.2 MONITORING WELL PURGING**

Groundwater monitoring wells will be purged and sampled using low-flow/low stress techniques prior to collecting groundwater samples. This technique consists of connecting a peristaltic pump to previously dedicated or newly-installed Teflon tubing with its intake located in the middle of the screened interval. Purging is initiated at a low flow rate (less than 1 liter per minute, L/min) and is adjusted such that the static water level remains constant (if possible) during the purging and sampling process (*e.g.*, discharge equals recharge). A target drawdown of 0.1 meters or less (if feasible) is standard sampling procedure for the Site, with a maximum allowed draw-down of one meter. If water levels continue to draw down more than one meter in a well despite purging at the slowest rate achievable (approximately 0.1 L/min), Site sampling procedures call for the well to be pumped dry and allowed to recharge prior to sampling.

Groundwater quality field parameters [pH, temperature, specific conductivity, turbidity, dissolved oxygen, and oxidation reduction potential (ORP)] will be measured in flow-through cells with calibrated water quality meters during purging. Static water levels will be maintained (where possible) and purging will continue until select water quality parameters stabilized. Stabilization will be considered achieved when the following conditions are established:

- pH measurements were within 0.1 standard units (S.U.);
- Temperature measurements were within 1 degree Centigrade (°C);
- Conductivity measurements were within  $\pm 10$  percent; and
- Turbidity measurements were approximately within  $\pm 10$  percent or less than 10 Nephelometric Turbidity Units (NTUs), or dissolved oxygen was within  $\pm 10$  percent.

Once field parameters stabilized, groundwater samples will be collected for analysis. Groundwater sampling logs showing field parameter measurements will be completed during well purging/sampling and presented in Appendix A of groundwater monitoring reports. Field parameter measurements at the time of sampling following stabilization will be recorded and compiled into Table 2 of the groundwater monitoring reports. Calibration forms for field instruments used to measure intrinsic groundwater parameters (pH, temperature, conductivity, etc.) will be completed during the sampling work and provided in Appendix B of the reports.

As discussed above, dedicated tubing has been installed in each well, thereby eliminating decontamination requirements and reducing potential cross-contamination for subsequent sampling events. Intake tubing for the monitoring well purging and sampling has typically been placed at the middle of the screened interval for each well, with some few exceptions noted in monitoring reports. This will continue to be the standard procedure for all monitoring wells.

Recovery wells are continuously active and will be sampled via in-line sampling ports. Grab samples for field parameter measurements will be taken at the time of sampling.

**5.3 MONITORING WELL SAMPLING**

Immediately following stabilization of water levels and indicator parameters (or after a well recharged after pumping dry), each well will be sampled for laboratory analysis of the site-specific volatile and semivolatile COCs as described in Section 5.4. Samples for volatile organic analyses will be collected first, with samples being taken from the tubing on the downstream end of the pump (before the flow-through cell). After the volatile organic samples are collected, semi-volatile samples will be collected in the same manner. Samples will be collected in sample containers provided by the analytical laboratory. To reduce potential cross-contamination, samples will be collected and transported in delivery groups of samples of similar historical constituent concentrations.

Once collected, samples will be immediately placed on ice in coolers and maintained at or below 4°C in dedicated on-site refrigerators until they were relinquished to laboratory personnel under proper chain-of-custody protocols on a daily basis. Chain-of-custody records will be maintained and included with the laboratory analytical laboratory reports provided in Appendix A of the monitoring reports.

**5.4 ANALYTICAL AND QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PROCEDURES**

The groundwater samples will be analyzed by TestAmerica Laboratories, Inc. of Pensacola, Florida or other qualified laboratory using EPA-approved SW-846 methods. Samples will be analyzed for some or all of the following established Site COCs as indicated by method on Tables 3 and 4:

Volatile organic compounds (VOCs) by EPA Method 8260C (except 2-chloroethanol):

- Carbon Disulfide
- Chloroethane
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethene
- Ethylene Oxide
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene
- Toluene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Vinyl Chloride
- 1,1,2,2-Tetrachlorethane
- 1,2,3-Trichloropropane
- 1,2-Dichloropropane

- cis-1,3-Dichloropropene
- Methyl Ethyl Ketone (2-Butanone)
- Acetone
- Benzene
- Chlorobenzene
- Chloromethane
- cis-1,2-Dichloroethene
- Methylene Chloride (Dichloromethane)
- Ethylbenzene
- Styrene
- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- Xylenes (total)
- 2-Chloroethanol (Ethylene Chlorohydrin; EPA Method 8015B; Formal area wells only).

Semivolatile organic compounds (SVOCs) by EPA Method 8270D:

- 1,4-Dioxane (p-Dioxane)
- bis(2-Chloroethoxy)methane
- bis(2-Chloroethyl)ether
- bis(2-ethylhexyl)phthalate
- Aniline
- Cresols (m and p)
- Cresol (o) (2-Methylphenol)
- Phenol

Termination of some or all laboratory analysis has been proposed at select wells.

To attain QA/QC objectives in terms of accuracy, precision, completeness, comparability and representativeness, QA/QC samples will be collected and shipped with the normal samples to the laboratory for analysis. QA/QC samples collected in the field will consist of field duplicates, matrix spike and matrix spike duplicates (MS/MSD), and trip blanks. One trip blank sample will be sent with each shipment of samples to be analyzed for VOCs. At the current time, field duplicates and MS/MSDs are collected on a 10 percent basis (one in 10), an interval that exceeds USEPA guidelines and has been deemed excessive. Going forward, field duplicates and MS/MSDs will be collected from five percent (one in 20) wells sampled, as per current USEPA requirements. The duplicate samples will be collected by filling additional sample containers with alternating aliquots from the sample stream. MS/MSD samples will be collected from additional aliquots of water from the selected wells. Trip

blanks will be prepared by the laboratory and accompany the bottle ware at all times until received again by the laboratory for analysis with the groundwater samples.

### 5.5 DECONTAMINATION PROCEDURES

In order to minimize possible cross-contamination of wells and samples, strict decontamination procedures will be followed during all sampling events. Between each well, the water level indicator probes will be decontaminated with Alconox<sup>®</sup> and triple-rinsed with water. Monitoring wells will be sampled in order of increasing concentrations (cleaner wells first) to minimize chances of cross contaminating wells or samples from wells. Dedicated purge/sampling tubing will be utilized I each well and down-hole (or in-situ) sampling pumps will not used during sampling events, eliminating the need for decontamination of the pumping equipment. New latex or nitrile gloves will be used at each well. Gloves were changed after purging and prior to sampling.

### 5.6 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

All IDW (*e.g.*, decontamination water, well purge water, personal protective equipment, etc.) will be managed immediately following generation. All purge water will be deposited in the secondary containment area sump at the on-site Ecology Groundwater Treatment Facility. This purge water will subsequently be mixed with recovered groundwater from the site recovery wells and treated on-site by means of the groundwater treatment system (carbon adsorption), and then pumped to the Escatawpa Publicly Owned Treatment Works (POTW) facility in accordance with the Site's pretreatment water discharge permit (Permit No. MSP092041). All other IDW will be properly stored on-site pending proper disposal.

### 5.7 OTHER PROCEDURES

Procedures for sample containerization and packing, sample shipment, cross-contamination control, Best Management Practices, field documentation, chain-of-custody, and data review will be conducted in accordance with applicable EPA operating procedures.

### 5.8 QA/QC REVIEW

An external QA/QC review of the laboratory data will be conducted that will be independent of the internal QA/QC procedures conducted by the laboratory (TestAmerica Laboratories, Inc.). The laboratory QA/QC procedures were based on method-specific limitations as specified by EPA SW-846. The data will be reviewed for compliance with the method-specific limitations as specified by EPA SW-846. Additionally, the data will be assessed using "*USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*" (EPA-540/R-99-008, October 1999) and professional judgment.

Reporting of groundwater monitoring results will occur once per year. Annual reports will consist of the same format that has been completed for many years now, with potentiometric maps (annual measuring events), summary laboratory results data tables (including both annual and historical results), COC plume maps, Mann-Kendall statistical trend analyses, a landfill leachate summary and an evaluation of landfill leak detection monitoring well results.

The current Site-wide groundwater monitoring program is at this time specified in the *Groundwater Monitoring Plan* (GMP), prepared for Rohm and Haas by Groundwater Services, Inc., dated February 4, 2000, with revisions dated July 13, 2001, January 11, 2005, and June 11, 2005. The purpose of the monitoring program and associated reports is to keep track of Site groundwater conditions as a whole in the first four aquifers beneath the facility and present the results of the groundwater sampling performed at the Facility during the semi-annual sampling events. Closed hazardous waste landfill leak detection groundwater monitoring results and leachate collection information are also provided, as well as periodic leachate analysis. In addition, groundwater recovery volumes and estimated contaminant mass removal is also summarized.

The groundwater sampling program has now been on-going for many years and currently includes over 170 monitoring and recovery wells (179 total). This monitoring work has yielded a tremendous amount of groundwater data for review and trend/spatial analysis. With the amount of data now collected, the increased knowledge and understanding of Site conditions, the addition of numerous monitoring and recovery wells over the years and primarily stable or decreasing COC concentrations over most of the Site, the current GMP has become outdated and in need of updating. The purpose of this report has been to assess and update the current groundwater monitoring program to reflect current Site needs and conditions. To that affect, spatial and statistical trend analyses were performed to determine the appropriate monitoring schedule for each monitoring and recovery well. This evaluation was conducted by both a manual hands-on well by well basis performed by Parsons utilizing its extensive knowledge and experience with the Site and its data (subject of the text of this report), and the RMWSA™ performed by Earthcon (Appendix A). The final proposed changes reflect a careful review, collaboration, and combination of the results of both methods. Sampling procedures have not been altered and will remain the same as now practiced to assure the collection of the highest quality and most useful/consistent data. Termination of some or all laboratory analysis has been proposed at select wells.

Monitoring wells at the Facility are screened in the four uppermost water-bearing zones, which extend to approximately 180 feet below grade. The four uppermost water-bearing zones are the Alluvial, the Upper Citronelle, the Lower Citronelle, and the Graham Ferry Aquifers. Constituents of concern (COCs) have been detected in the Alluvial, Upper Citronelle, and Lower Citronelle Aquifers, with the underlying Graham Ferry Aquifer remaining unaffected. In an effort to contain and remove COCs from the subsurface, a pump and treat remediation system is currently operating at the Site with recovery wells in each of the three uppermost water-bearing zones. Information regarding the recovery effort is included in the semi-annual monitoring reports.

Currently, all Site monitoring and recovery wells (179 total) are either sampled on a semi-annual basis (May and November; 111 wells) or every two years (every other November; 68 additional wells). Currently, there are 48 recovery and monitoring wells sampled on a semi-annual basis in the Alluvial Aquifer, 31 in the Upper Citronelle Aquifer, 32 in the Lower Citronelle Aquifer and none in the Graham Ferry Aquifer. Wells scheduled for sampling

every two years include 34 in the Alluvial Aquifer, 18 in the Upper Citronelle Aquifer, twelve in the Lower Citronelle Aquifer and four in the Graham Ferry Aquifer.

Using a very specific set of criteria discussed in detail in Section 4.1, Parsons evaluated the monitoring well network with regard to current Site requirements and needs. Criteria included location of each well, use of each well, previous sampling history of each well, Mann-Kendall statistical trend analyses, whether or not other nearby monitoring wells were better positioned for monitoring needs, and the results obtained from the RMWSA™ performed by Earthcon. Using the criteria, monitoring and recovery wells were classified for sampling on an annual or an every two year basis, or recommended for termination of sampling if the well appeared to be no longer needed.

The proposed new sampling/analytical list and schedule were developed with the intent of maintaining more than adequate monitoring of Site groundwater conditions and recovery efforts, while removing unneeded wells or excessive monitoring frequency of wells with long established and predictable concentration trends. The resulting proposed new sampling program should accomplish those goals in a systematic and documented fashion. The proposed new sampling program is summarized as follows:

#### Alluvial Aquifer

Monitoring wells are currently intended to monitor two separate COC plumes and the perimeters of three permitted waste facilities including the closed former V-Lagoon, the closed former T-Lagoon and the closed hazardous waste landfill. The Site groundwater COC plumes are not generally associated with the closed waste facilities, and their surrounding monitoring wells are mostly clean except in regard to the two primary COC plumes which are associated primarily with other areas/former activities. The primary Site COC plume is located in and surrounding the former Formal area. The Formal area COC plume stretches from the former Formal area southward to the Escatawpa River and northward to the V-Lagoon (shown in yellow contours on Figure 3). By far the highest concentrations are located within the former Formal area, where DNAPL has been observed. A much smaller and lower concentration plume (trace level in comparison to the Formal area) is located southeast of the T-Lagoon and is associated with former drum storage activity rather than the T-Lagoon.

The proposed new groundwater sampling program calls for: semi-annual sampling of the five hazardous waste landfill leak detection monitoring wells according to current permit requirements; annual sampling of nine recovery wells and 18 monitoring wells (27 total wells); every two year sampling of 16 monitoring wells; and sampling termination at 3 recovery wells and 31 monitoring wells (34 total wells). The proposed new sampling program includes nine recovery wells and 39 monitoring wells (48 total wells), and focuses effort in and around the former Formal area, where the primary COC plume is located. The program also covers other key areas of the Site, including the other much lower concentration COC plume sourced from a former drum storage area southeast of the T-Lagoon, the closed hazardous waste landfill and the closed V-Lagoon area located northwest of the former Formal area.

### Upper Citronelle Aquifer

The Upper Citronelle Aquifer recovery and monitoring wells are focused on monitoring and controlling the extent and concentrations of a COC plume centering on the Formal area and extending northwestward into the V-Lagoon area and southeastward toward the Escatawpa River. Migration of COCs toward the River has been successfully controlled.

The proposed new groundwater sampling program calls for: annual sampling of all six recovery wells and 17 monitoring wells (23 total wells); every two year sampling of 13 monitoring wells; and sampling termination at 13 monitoring wells. The proposed new sampling program includes a total of six recovery wells and 30 monitoring wells (36 total wells), and similar for the Alluvial Aquifer, focuses effort in and around the former Formal area, where the primary COC plume is located. The program also covers other key areas of the Site, including the other much lower concentration COC plume sourced from a former drum storage area southeast of the T-Lagoon, the closed hazardous waste landfill and the closed V-Lagoon area located northwest of the former Formal area.

### Lower Citronelle Aquifer

Unlike in the overlying Alluvial and Upper Citronelle Aquifers, both monitoring and recovery wells in the Lower Citronelle Aquifer are more spread out due to a lower concentration but larger and more elongated shape COC plume within the Lower Citronelle aquifer. The COC plume in the Lower Citronelle Aquifer appears to be sourced from within and just to the east of the Formal area, and it extends both to the northeast off-site and northwest toward and beyond the former V-Lagoon. Recovery wells are designed to hold the plume in place and/or pull it back toward the Site. The conversion of MW-123 into a recovery well was completed to aid in this effort at the northeast perimeter of the BCEM plume. The monitoring well network is designed to monitor the extent and potential migration of the BCEM plume.

The proposed new groundwater sampling program calls for: annual sampling of all ten recovery wells and 13 monitoring wells (23 total wells); every two year sampling of eight monitoring wells; and sampling termination at 13 monitoring wells. The proposed new sampling program includes a total of 10 recovery wells and 21 monitoring wells (31 total wells).

Sampling methodologies at the Site will remain unchanged. Analytical methods and procedures will also remain unchanged, except that sampling for 2-chloroethanol will be limited to Formal area wells where it is typically present.

## TABLES

**TABLE 1  
MONITORING WELL CONSTRUCTION DETAILS  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	Well Depth (from TOC)	Depth to TOS (from TOC)	Depth to BOS (from TOC)	Top of Casing (feet MSL)	Ground Elevation (feet MSL)	Stick-up (feet)	Current Schedule
<b>Alluvial Aquifer</b>								
ARW-1	33.0	34.87	13.44	33.44	9.61	7.74	1.87	Semi-Annual
ARW-2	32.0	33.93	12.39	32.39	7.95	6.02	1.93	Semi-Annual
ARW-3	36.0	37.89	16.24	36.24	9.05	7.16	1.89	Semi-Annual
ARW-4	32.0	33.81	12.15	32.15	9.63	7.82	1.81	Semi-Annual
ARW-5	37.0	38.95	17.36	37.36	9.14	7.19	1.95	Semi-Annual
LAP-2	18.0	20.16	12.80	17.80	8.74	6.58	2.16	Semi-Annual
LAP-3	33.0	35.03	22.76	32.76	8.07	6.04	2.03	Semi-Annual
LAP-4	35.5	36.80	20.15	35.15	8.99	7.69	1.30	Semi-Annual
MW-1	25.3	28.14	13.71	28.54	8.96	6.12	2.84	Semi-Annual
MW-2	39.0	41.60	17.18	42.18	8.64	6.04	2.60	Every 2-Years
MW-3	26.0	28.52	13.94	28.94	9.18	6.66	2.52	Every 2-Years
MW-4	25.0	27.48	12.91	27.91	9.48	7.00	2.48	Every 2-Years
MW-5	25.0	28.29	13.61	28.61	10.03	6.74	3.29	Every 2-Years
MW-6	25.0	27.64	18.05	28.05	10.48	7.84	2.64	Semi-Annual
MW-7R	38.0	40.33	25.03	35.03	10.17	7.84	2.33	Semi-Annual
MW-8	21.0	23.87	13.45	24.45	9.65	6.78	2.87	Semi-Annual
MW-9	25.0	26.58	17.02	27.02	8.65	7.07	1.58	Semi-Annual
MW-10	20.0	23.39	13.80	23.80	10.40	7.01	3.39	Every 2-Years
MW-11	31.0	33.12	23.63	33.63	9.15	7.03	2.12	Every 2-Years
MW-12	28.5	30.15	18.65	28.95	9.09	7.44	1.65	Every 2-Years
MW-14	31.0	34.34	23.72	33.72	10.22	6.88	3.34	Every 2-Years
MW-15	41.5	44.85	32.95	44.45	8.05	4.70	3.35	Every 2-Years
MW-16	41.5	44.34	33.50	44.00	8.00	5.16	2.84	Every 2-Years
MW-17	39.0	40.59	29.16	39.16	7.27	5.68	1.59	Every 2-Years
MW-19	35.0	36.73	25.36	35.36	8.56	6.83	1.73	Every 2-Years
MW-22	36.0	39.32	27.71	37.71	9.93	6.61	3.32	Every 2-Years
MW-24	27.0	29.97	17.70	27.70	8.43	5.46	2.97	Every 2-Years
MW-26	33.0	35.77	23.11	33.11	10.14	7.37	2.77	Every 2-Years
MW-32	40.0	42.01	27.42	36.42	7.86	5.85	2.01	Semi-Annual
MW-33	37.0	39.57	25.03	34.03	8.15	5.58	2.57	Semi-Annual
MW-34	40.0	42.05	22.65	36.65	7.88	5.83	2.05	Semi-Annual
MW-36	19.0	21.37	10.30	19.30	9.82	7.45	2.37	Semi-Annual
MW-40	25.6	27.90	18.36	27.74	9.68	7.38	2.30	Every 2-Years
MW-42	30.1	32.25	22.85	32.22	9.69	7.54	2.15	Every 2-Years
MW-47	30.0	31.77	12.31	31.91	8.35	6.58	1.77	Every 2-Years
MW-48	34.9	38.22	8.78	38.16	10.13	6.81	3.32	Semi-Annual
MW-49	37.0	39.60	30.19	39.89	7.31	4.71	2.60	Every 2-Years
MW-50	35.0	37.36	27.75	37.75	9.61	7.25	2.36	Semi-Annual
MW-51	27.0	29.25	19.79	29.79	8.79	6.54	2.25	Semi-Annual
MW-53	25.0	24.44	14.87	24.57	7.11	7.67	-0.56	Every 2-Years
MW-54	32.0	31.34	21.58	31.58	6.37	7.03	-0.66	Every 2-Years
MW-55	26.0	25.73	16.03	26.03	7.42	7.69	-0.27	Semi-Annual
MW-56	29.0	31.40	21.71	31.71	10.35	7.95	2.40	Semi-Annual
MW-57	27.0	29.33	19.94	29.64	7.26	4.93	2.33	Every 2-Years
MW-58	27.0	28.84	19.91	29.91	8.43	6.59	1.84	Semi-Annual
MW-59	20.0	22.96	13.56	23.26	9.40	6.44	2.96	Every 2-Years
MW-74	21.1	20.96	11.73	21.53	7.61	7.75	-0.14	Every 2-Years
MW-75	27.5	27.20	18.28	27.98	5.49	5.79	-0.30	Semi-Annual
MW-76	19.7	21.62	12.68	22.28	6.45	4.53	1.92	Semi-Annual
MW-86	32.9	32.65	23.27	32.97	7.52	7.77	-0.25	Semi-Annual
MW-87	18.0	20.34	10.74	20.74	7.53	5.19	2.34	Every 2-Years
MW-88	20.0	22.65	13.16	23.16	8.14	5.49	2.65	Every 2-Years

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<b>Alluvial Aquifer, Cont.</b>								
MW-93	29.0	28.83	18.57	28.57	7.22	7.39	-0.17	Semi-Annual
MW-94	27.0	26.52	17.18	27.18	4.46	4.94	-0.48	Semi-Annual
MW-103	30.5	30.30	20.80	30.80	7.08	7.28	-0.20	Semi-Annual
MW-104	25.0	27.52	17.69	27.29	6.78	4.26	2.52	Semi-Annual
MW-105	31.5	31.27	21.49	31.49	5.40	5.63	-0.23	Semi-Annual
MW-106	28.0	27.82	18.09	27.69	5.44	5.62	-0.18	Semi-Annual
MW-107	21.0	23.62	13.96	23.96	9.83	7.21	2.62	Semi-Annual
MW-108	30.0	32.37	22.88	32.88	9.87	7.50	2.37	Semi-Annual
MW-109	15.0	17.42	7.93	17.93	7.24	4.82	2.42	Semi-Annual
MW-133	30.0	32.40	22.40	32.40	9.28	6.88	2.40	Semi-Annual
MW-134	16.0	19.22	9.22	19.22	9.33	6.11	3.22	Semi-Annual
MW-135	42.0	44.62	34.62	44.62	7.95	5.33	2.62	Semi-Annual
MW-136	26.9	26.81	14.96	24.99	8.15	8.19	-0.04	Semi-Annual
MW-137	24.0	25.89	13.89	24.03	8.40	6.51	1.89	Semi-Annual
TAP-1	30.5	32.95	20.26	30.26	7.44	4.99	2.45	Every 2-Years
TAP-2	30.5	32.78	20.04	30.04	8.03	5.75	2.28	Every 2-Years
TAP-3	28.0	30.38	17.80	27.80	7.88	5.50	2.38	Every 2-Years
TAP-4	38.0	40.24	17.81	37.81	8.22	5.98	2.24	Semi-Annual
TAP-5	33.5	36.06	23.45	33.45	9.03	6.47	2.56	Every 2-Years
TAR-1	28.0	29.43	16.97	26.97	7.88	6.45	1.43	Semi-Annual
TAR-2	28.0	29.70	16.69	26.69	7.72	6.02	1.70	Semi-Annual
TAR-3	22.0	23.20	13.84	23.84	7.72	6.52	1.20	Semi-Annual
TAR-4	23.0	24.01	11.67	21.67	7.70	6.69	1.01	Semi-Annual
VAP-1	36.0	38.22	25.57	35.57	9.14	6.92	2.22	Every 2-Years
VAP-2	33.0	35.22	22.70	32.70	9.07	6.85	2.22	Every 2-Years
VAP-3	33.0	35.14	22.47	32.47	9.28	7.14	2.14	Every 2-Years
VAP-4	31.0	33.22	20.76	30.76	8.35	6.13	2.22	Every 2-Years
VAR-1	31.0	31.00	18.53	28.53	8.76	8.76	0.00	Semi-Annual
VAR-2	33.0	33.98	16.44	31.44	10.31	9.33	0.98	Semi-Annual
VAR-3	33.0	35.21	17.21	32.51	9.44	7.23	2.21	Semi-Annual

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<b>Upper Citronelle Aquifer</b>								
MW-18	76.0	78.04	65.48	75.48	7.97	5.93	2.04	Every 2-Years
MW-20	65.0	68.05	45.48	65.48	9.50	6.45	3.05	Every 2-Years
MW-23	68.0	69.76	47.23	67.23	8.88	7.12	1.76	Semi-Annual
MW-27R	70.0	72.30	52.75	72.75	9.72	7.42	2.30	Semi-Annual
MW-28	77.0	79.96	55.42	75.42	9.98	7.02	2.96	Semi-Annual
MW-29	70.0	72.46	59.86	69.86	10.31	7.85	2.46	Every 2-Years
MW-30	70.0	72.39	49.76	69.76	10.07	7.68	2.39	Every 2-Years
MW-31	68.0	70.20	47.70	67.70	8.42	6.22	2.20	Semi-Annual
MW-35	70.0	72.16	59.14	69.14	10.16	8.00	2.16	Semi-Annual
MW-37	75.0	77.45	63.42	73.42	10.15	7.70	2.45	Every 2-Years
MW-38	74.0	76.38	63.29	73.29	8.22	5.84	2.38	Every 2-Years
MW-41	80.7	83.39	63.52	82.88	9.97	7.28	2.69	Every 2-Years
MW-60	65.0	67.29	47.99	67.59	11.48	9.19	2.29	Every 2-Years
MW-61	54.0	56.60	47.29	56.89	7.31	4.71	2.60	Every 2-Years
MW-62	65.0	64.72	45.29	64.89	7.40	7.68	-0.28	Semi-Annual
MW-63	80.0	79.72	60.27	80.27	6.92	7.20	-0.28	Semi-Annual
MW-64	67.0	66.63	52.22	67.22	7.45	7.82	-0.37	Semi-Annual
MW-65	70.0	72.28	52.94	72.84	7.29	5.01	2.28	Semi-Annual
MW-66	74.2	76.50	57.33	76.93	6.49	4.19	2.30	Every 2-Years
MW-67	69.0	71.07	51.80	71.40	10.10	8.03	2.07	Semi-Annual
MW-68	70.0	72.85	53.65	73.25	8.83	5.98	2.85	Semi-Annual
MW-69	70.0	69.46	50.30	69.90	4.63	5.17	-0.54	Semi-Annual
MW-70	69.5	71.54	52.04	72.04	8.20	6.16	2.04	Semi-Annual
MW-77	79.1	79.14	59.78	79.48	7.93	7.89	0.04	Every 2-Years
MW-78	83.1	82.59	63.50	83.40	5.29	5.80	-0.51	Semi-Annual
MW-79	69.1	70.99	51.85	71.55	8.42	6.53	1.89	Semi-Annual
MW-80	75.9	77.99	58.86	78.56	8.71	6.62	2.09	Every 2-Years
MW-81	80.1	82.35	63.11	82.81	6.73	4.48	2.25	Every 2-Years
MW-89	64.0	63.74	44.31	64.31	7.71	7.97	-0.26	Every 2-Years
MW-90	66.0	65.37	46.30	64.30	5.50	6.13	-0.63	Every 2-Years
MW-95	66.0	68.69	49.21	69.21	9.33	6.64	2.69	Semi-Annual
MW-96	64.0	63.75	43.50	63.50	7.15	7.40	-0.25	Semi-Annual
MW-97	62.0	61.64	52.13	62.13	4.51	4.87	-0.36	Semi-Annual
MW-110	62.0	61.67	42.10	61.70	6.11	6.44	-0.33	Semi-Annual
MW-111	66.3	68.88	59.16	69.16	10.00	7.42	2.58	Semi-Annual
MW-112	72.0	74.50	63.99	73.99	8.45	5.95	2.50	Every 2-Years
MW-124	68.0	67.86	47.86	67.86	6.51	6.65	-0.14	Every 2-Years
MW-125	66.0	65.64	46.04	65.64	6.11	6.47	-0.36	Semi-Annual
MW-126	69.0	72.05	52.05	72.05	8.73	5.68	3.05	Semi-Annual
MW-132	78.0	81.10	61.10	81.10	7.88	4.78	3.10	Semi-Annual
MW-138	62.5	63.91	42.41	62.06	7.91	6.50	1.41	Semi-Annual
MW-144			43.44	73.44	10.28	7.85	2.44	Semi-Annual
UCRW-1	70.0	71.94	45.29	70.29	8.96	7.02	1.94	Semi-Annual
UCRW-2	70.0	71.81	45.56	70.56	9.99	8.18	1.81	Semi-Annual
UCRW-3	70.0	72.06	45.45	70.45	8.20	6.14	2.06	Semi-Annual
UCRW-4	61.0	62.82	42.29	67.29	9.20	7.38	1.82	Semi-Annual
UCRW-5	61.0	62.92	41.19	61.19	9.34	7.42	1.92	Semi-Annual
VUCP-1	75.0	76.86	54.42	74.42	8.76	6.90	1.86	Every 2-Years
VUCR-1R	71.0	71.58	49.58	69.58	9.56	8.78	0.58	Semi-Annual

**TABLE 1**  
**MONITORING WELL CONSTRUCTION DETAILS**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	Well Depth (from TOC)	Depth to TOS (from TOC)	Depth to BOS (from TOC)	Top of Casing (feet MSL)	Ground Elevation (feet MSL)	Stick-up (feet)	Current Schedule
<b>Lower Citronelle Aquifer</b>								
LCRW-1	105.0	107.13	85.13	105.25	8.72	6.59	2.13	Semi-Annual
LCRW-2	117.0	119.25	89.25	109.19	12.44	10.19	2.25	Semi-Annual
LCRW-3	109.0	111.11	89.11	109.28	16.03	13.92	2.11	Semi-Annual
LCRW-4	102.0	104.30	82.30	102.35	9.03	6.73	2.30	Semi-Annual
LCRW-5	106.0	107.82	85.82	105.97	9.44	7.62	1.82	Semi-Annual
LCRW-6	112.0	114.11	92.11	112.08	9.76	7.65	2.11	Semi-Annual
LCRW-7	107.0	108.77	86.77	106.77	8.14	6.37	1.77	Semi-Annual
LCRW-8	108.0	110.09	88.09	108.23	9.38	7.29	2.09	Semi-Annual
LCRW-9	112.0	114.00	92.00	111.97	8.83	6.83	2.00	Semi-Annual
MW-21	93.5	94.31	81.76	91.76	8.23	7.42	0.81	Every 2-Years
MW-25R	111.0	113.44	94.29	113.89	10.68	8.24	2.44	Semi-Annual
MW-44	110.6	112.61	82.83	112.23	8.22	6.21	2.01	Every 2-Years
MW-45	105.1	107.67	87.98	107.36	9.75	7.18	2.57	Semi-Annual
MW-46	100.7	103.01	83.36	102.79	9.09	6.78	2.31	Semi-Annual
MW-72	90.0	92.46	83.17	92.97	7.29	4.83	2.46	Every 2-Years
MW-73	109.0	111.13	91.44	111.24	9.14	7.01	2.13	Every 2-Years
MW-82R	114.3	113.75	94.43	114.33	4.94	5.49	-0.55	Semi-Annual
MW-84	105.0	107.12	88.55	108.25	9.99	7.87	2.12	Semi-Annual
MW-85	116.1	118.19	99.06	118.76	9.37	7.28	2.09	Every 2-Years
MW-91	105.0	107.12	85.25	105.25	8.60	6.48	2.12	Semi-Annual
MW-92	116.0	115.70	96.12	116.12	6.67	6.97	-0.30	Semi-Annual
MW-98	110.5	110.12	90.58	110.58	4.43	4.81	-0.38	Semi-Annual
MW-99	107.7	107.17	88.02	108.02	5.39	5.92	-0.53	Semi-Annual
MW-100	109.0	108.86	89.15	109.15	7.47	7.61	-0.14	Every 2-Years
MW-101	107.0	109.46	89.96	109.96	8.51	6.05	2.46	Semi-Annual
MW-102	107.0	109.86	90.24	110.24	10.55	7.69	2.86	Semi-Annual
MW-113	110.0	110.03	90.05	109.65	7.17	7.14	0.03	Semi-Annual
MW-114	110.5	110.18	90.39	109.99	5.90	6.22	-0.32	Semi-Annual
MW-115	111.5	111.21	91.41	111.41	6.41	6.70	-0.29	Semi-Annual
MW-116	105.0	107.54	87.91	107.91	9.12	6.58	2.54	Every 2-Years
MW-117	106.0	108.55	88.90	108.50	8.66	6.11	2.55	Semi-Annual
MW-118	114.5	117.44	97.86	117.46	8.76	5.82	2.94	Every 2-Years
MW-119	104.0	106.54	87.00	106.60	7.08	4.54	2.54	Every 2-Years
MW-123	110.0	112.26	93.01	112.61	10.20	7.94	2.26	Semi-Annual
MW-127	116.5	--	96.21	116.21	6.46	6.75	-0.29	Every 2-Years
MW-128	111.0	113.30	93.70	113.30	10.90	8.60	2.30	Semi-Annual
MW-129	107.0	110.15	90.15	110.15	11.34	8.19	3.15	Semi-Annual
MW-130	109.0	112.04	92.44	112.04	9.61	6.57	3.04	Semi-Annual
MW-131	106.0	108.74	89.14	108.74	9.88	7.14	2.74	Semi-Annual
MW-139	126.0	127.33	105.33	125.40	8.81	7.48	1.33	Semi-Annual
MW-140	104.0	105.72	83.72	103.63	7.20	5.48	1.72	Semi-Annual
MW-141	102.0	103.99	91.99	102.07	8.31	6.32	1.99	Semi-Annual
MW-142	109.0	111.08	89.08	109.08	8.45	6.27	2.08	Semi-Annual
MW-143	110.0	112.54	95.54	110.54	9.21	6.47	2.54	Semi-Annual
<b>Graham Ferry Aquifer</b>								
MW-83	144.0	146.04	126.88	146.58	8.40	6.36	2.04	Every 2-Years
MW-120	176.0	176.57	159.19	178.79	7.48	6.91	0.57	Every 2-Years
MW-121	176.0	178.57	158.93	178.53	9.09	6.52	2.57	Every 2-Years
MW-122	176.0	178.29	158.84	178.44	8.87	6.58	2.29	Every 2-Years

BGS = Below Ground Surface  
MSL = Mean Sea Level  
TOC = Top of Casing  
TOS = Top of Screen  
BOS = Bottom of Screen

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<b>ALLUVIAL AQUIFER</b>							
<i>1,2,3-Trichloropropane</i>							
ARW-1	15	1	0.93	-49	99.2%	Decreasing	Yes
ARW-2	15	0	1.52	-33	94.3%	Non-Detect	No
ARW-3	14	1	0.56	-30	94.4%	Probably Decreasing	No
ARW-4	14	6	0.64	-36	97.3%	Decreasing	Yes
ARW-5	14	1	0.98	2	52.2%	No Trend	No
LAP-2	14	0	0.83	7	62.6%	Non-Detect	No
LAP-3	14	0	0.83	7	62.6%	Non-Detect	No
LAP-4	14	0	0.83	7	62.6%	Non-Detect	No
MW-1	14	2	0.83	-31	95.0%	Decreasing	Yes
MW-2	4	0	0.00	0	37.5%	Non-Detect	No
MW-3	4	0	0.00	0	37.5%	Non-Detect	No
MW-4	4	0	0.00	0	37.5%	Non-Detect	No
MW-5	4	0	0.00	0	37.5%	Non-Detect	No
MW-6	14	0	0.83	7	62.6%	Non-Detect	No
MW-7R	14	9	0.61	-20	84.8%	Stable	No
MW-8	14	13	0.47	-35	96.9%	Decreasing	Yes
MW-9	13	0	0.85	8	66.2%	Non-Detect	No
MW-10	4	0	0.00	0	37.5%	Non-Detect	No
MW-11	4	0	0.00	0	37.5%	Non-Detect	No
MW-12	4	0	0.00	0	37.5%	Non-Detect	No
MW-14	4	0	0.72	0	37.5%	Non-Detect	No
MW-15	4	0	0.00	0	37.5%	Non-Detect	No
MW-16	4	0	0.00	0	37.5%	Non-Detect	No
MW-17	4	0	0.00	0	37.5%	Non-Detect	No
MW-19	4	0	0.00	0	37.5%	Non-Detect	No
MW-22	4	0	0.00	0	37.5%	Non-Detect	No
MW-24	4	0	0.00	0	37.5%	Non-Detect	No
MW-26	4	0	1.38	3	72.9%	Non-Detect	No
MW-32	15	0	0.92	14	73.7%	Non-Detect	No
MW-33	14	0	0.83	7	62.6%	Non-Detect	No
MW-34	15	0	0.82	6	59.6%	Non-Detect	No
MW-36	15	0	0.82	8	63.3%	Non-Detect	No
MW-40	4	0	0.00	0	37.5%	Non-Detect	No
MW-42	4	0	0.00	0	37.5%	Non-Detect	No
MW-47	4	0	0.00	0	37.5%	Non-Detect	No
MW-48	14	0	0.83	7	62.6%	Non-Detect	No
MW-49	4	0	0.00	0	37.5%	Non-Detect	No
MW-50	14	0	0.83	7	62.6%	Non-Detect	No
MW-51	14	0	0.83	7	62.6%	Non-Detect	No
MW-53	5	0	0.00	0	40.8%	Non-Detect	No
MW-54	5	0	0.00	0	40.8%	Non-Detect	No
MW-55	15	2	0.83	-11	68.7%	Stable	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
MW-56	14	0	0.83	7	62.6%	Non-Detect	No
MW-57	4	0	0.00	0	37.5%	Non-Detect	No
MW-58	14	0	0.83	7	62.6%	Non-Detect	No
MW-59	4	0	0.00	0	37.5%	Non-Detect	No
MW-74	4	0	0.00	0	37.5%	Non-Detect	No
MW-75	14	0	0.83	7	62.6%	Non-Detect	No
MW-76	14	0	0.83	7	62.6%	Non-Detect	No
MW-86	14	11	1.22	-75	100.0%	Decreasing	Yes
MW-87	4	0	0.00	0	37.5%	Non-Detect	No
MW-88	4	0	0.00	0	37.5%	Non-Detect	No
MW-93	10	0	0.90	3	56.9%	Non-Detect	No
MW-94	14	0	0.83	7	62.6%	Non-Detect	No
MW-103	14	5	0.74	-17	80.6%	Stable	No
MW-104	14	0	0.83	7	62.6%	Non-Detect	No
MW-105	14	0	0.83	7	62.6%	Non-Detect	No
MW-106	13	0	0.85	8	66.2%	Non-Detect	No
MW-107	14	0	0.83	7	62.6%	Non-Detect	No
MW-108	14	0	0.83	7	62.6%	Non-Detect	No
MW-109	14	0	0.83	7	62.6%	Non-Detect	No
MW-133	14	0	0.83	7	62.6%	Non-Detect	No
MW-134	14	0	0.83	7	62.6%	Non-Detect	No
MW-135	15	0	0.92	14	73.7%	Non-Detect	No
MW-136	14	0	0.83	7	62.6%	Non-Detect	No
MW-137	14	0	0.83	7	62.6%	Non-Detect	No
TAP-1	4	0	0.00	0	37.5%	Non-Detect	No
TAP-2	4	0	0.00	0	37.5%	Non-Detect	No
TAP-3	4	0	0.00	0	37.5%	Non-Detect	No
TAP-4	14	0	0.81	-7	62.6%	Non-Detect	No
TAP-5	4	0	0.00	0	37.5%	Non-Detect	No
TAR-1	7	0	0.96	0	43.7%	Non-Detect	No
TAR-2	7	2	0.86	-11	93.2%	Probably Decreasing	No
TAR-3	7	1	0.54	-15	98.5%	Decreasing	Yes
TAR-4	7	2	0.86	4	66.7%	No Trend	No
VAP-1	4	0	0.46	-1	50.0%	Non-Detect	No
VAP-2	4	0	0.00	0	37.5%	Non-Detect	No
VAP-3	4	0	0.00	0	37.5%	Non-Detect	No
VAP-4	4	4	0.10	1	50.0%	No Trend	No
VAR-1	5	0	0.00	0	40.8%	Non-Detect	No
VAR-2	7	0	0.82	-9	88.1%	Non-Detect	No
VAR-3	7	2	0.71	-11	93.2%	Probably Decreasing	No
VP-01	3	2	0.00	0	0.0%	Insufficient Data	No
VP-02	2	2	0.00	0	0.0%	Insufficient Data	No
VP-03	2	1	0.00	0	0.0%	Insufficient Data	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>1,2-Dichloroethane (1,2-DCA)</i>							
ARW-1	15	15	0.57	-68	100.0%	Decreasing	Yes
ARW-2	15	15	0.55	-52	99.5%	Decreasing	Yes
ARW-3	14	14	0.30	-65	100.0%	Decreasing	Yes
ARW-4	14	14	0.80	-46	99.4%	Decreasing	Yes
ARW-5	14	14	0.24	46	99.4%	Increasing	Yes
LAP-2	14	0	0.00	0	47.8%	Non-Detect	No
LAP-3	14	0	0.00	0	47.8%	Non-Detect	No
LAP-4	14	12	1.40	-1	50.0%	No Trend	No
MW-1	14	14	0.50	-39	98.2%	Decreasing	Yes
MW-2	4	0	0.00	0	37.5%	Non-Detect	No
MW-3	4	0	0.00	0	37.5%	Non-Detect	No
MW-4	4	0	0.00	0	37.5%	Non-Detect	No
MW-5	4	3	0.79	4	83.3%	No Trend	No
MW-6	14	14	0.38	-19	83.5%	Stable	No
MW-7R	14	11	0.81	-13	74.1%	Stable	No
MW-8	14	14	0.60	-50	99.8%	Decreasing	Yes
MW-9	13	0	0.00	0	47.6%	Non-Detect	No
MW-10	4	0	0.00	0	37.5%	Non-Detect	No
MW-11	4	0	0.00	0	37.5%	Non-Detect	No
MW-12	4	0	0.00	0	37.5%	Non-Detect	No
MW-14	4	0	0.72	0	37.5%	Non-Detect	No
MW-15	4	0	0.00	0	37.5%	Non-Detect	No
MW-16	4	1	0.57	-3	72.9%	Stable	No
MW-17	4	0	0.00	0	37.5%	Non-Detect	No
MW-19	4	0	0.00	0	37.5%	Non-Detect	No
MW-22	4	0	0.00	0	37.5%	Non-Detect	No
MW-24	4	0	0.00	0	37.5%	Non-Detect	No
MW-26	4	4	1.79	5	89.6%	No Trend	No
MW-32	15	1	0.01	10	66.9%	No Trend	No
MW-33	14	8	0.32	17	80.6%	No Trend	No
MW-34	15	0	0.00	0	48.0%	Non-Detect	No
MW-36	15	14	0.57	44	98.4%	Increasing	Yes
MW-40	4	0	0.00	0	37.5%	Non-Detect	No
MW-42	4	0	0.00	0	37.5%	Non-Detect	No
MW-47	4	4	0.17	-2	62.5%	Stable	No
MW-48	14	0	0.00	0	47.8%	Non-Detect	No
MW-49	4	0	0.00	0	37.5%	Non-Detect	No
MW-50	14	0	0.00	0	47.8%	Non-Detect	No
MW-51	14	0	0.00	0	47.8%	Non-Detect	No
MW-53	5	2	0.28	1	50.0%	No Trend	No
MW-54	5	1	0.18	0	40.8%	Stable	No
MW-55	15	10	3.44	-25	88.0%	No Trend	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
MW-56	14	7	0.87	11	70.5%	No Trend	No
MW-57	4	0	0.00	0	37.5%	Non-Detect	No
MW-58	14	0	0.00	0	47.8%	Non-Detect	No
MW-59	4	0	0.00	0	37.5%	Non-Detect	No
MW-74	4	0	0.00	0	37.5%	Non-Detect	No
MW-75	14	0	0.00	0	47.8%	Non-Detect	No
MW-76	14	5	1.15	-50	99.8%	Decreasing	Yes
MW-86	14	13	1.17	-67	100.0%	Decreasing	Yes
MW-87	4	0	0.00	0	37.5%	Non-Detect	No
MW-88	4	0	0.00	0	37.5%	Non-Detect	No
MW-93	10	10	0.77	37	100.0%	Increasing	Yes
MW-94	14	12	0.73	-42	98.9%	Decreasing	Yes
MW-103	14	13	1.62	-38	97.9%	Decreasing	Yes
MW-104	14	0	0.00	0	47.8%	Non-Detect	No
MW-105	14	4	0.10	16	79.1%	No Trend	No
MW-106	13	0	0.00	0	47.6%	Non-Detect	No
MW-107	14	1	0.47	11	70.5%	No Trend	No
MW-108	14	0	0.00	0	47.8%	Non-Detect	No
MW-109	14	2	0.55	-1	50.0%	Stable	No
MW-133	14	14	0.19	-25	90.4%	Probably Decreasing	No
MW-134	14	0	0.00	0	47.8%	Non-Detect	No
MW-135	15	0	0.00	0	48.0%	Non-Detect	No
MW-136	14	1	0.07	9	66.6%	No Trend	No
MW-137	14	0	0.00	0	47.8%	Non-Detect	No
TAP-1	4	0	0.00	0	37.5%	Non-Detect	No
TAP-2	4	0	0.00	0	37.5%	Non-Detect	No
TAP-3	4	0	0.00	0	37.5%	Non-Detect	No
TAP-4	14	14	0.51	-15	77.5%	Stable	No
TAP-5	4	0	0.00	0	37.5%	Non-Detect	No
TAR-1	7	7	0.27	6	76.4%	No Trend	No
TAR-2	7	6	0.83	-11	93.2%	Probably Decreasing	No
TAR-3	7	7	0.51	-19	99.9%	Decreasing	Yes
TAR-4	7	7	0.56	7	80.9%	No Trend	No
VAP-1	4	4	1.07	-2	62.5%	No Trend	No
VAP-2	4	4	0.86	0	37.5%	Stable	No
VAP-3	4	4	0.45	-2	62.5%	Stable	No
VAP-4	4	4	0.28	2	62.5%	No Trend	No
VAR-1	5	3	0.84	-7	92.1%	Probably Decreasing	No
VAR-2	7	7	1.10	-15	98.5%	Decreasing	Yes
VAR-3	7	7	0.93	-13	96.5%	Decreasing	Yes
VP-01	3	3	0.00	0	0.0%	Insufficient Data	No
VP-02	2	2	0.00	0	0.0%	Insufficient Data	No
VP-03	2	2	0.00	0	0.0%	Insufficient Data	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>1,4-Dioxane</i>							
ARW-1	15	14	0.73	-23	85.9%	Stable	No
ARW-2	15	14	0.60	-5	57.7%	Stable	No
ARW-3	14	14	0.51	32	95.5%	Increasing	Yes
ARW-4	14	13	0.66	16	79.1%	No Trend	No
ARW-5	14	13	0.41	31	95.0%	Increasing	Yes
LAP-2	14	1	0.36	-16	79.1%	Stable	No
LAP-3	14	0	0.36	-6	60.6%	Non-Detect	No
LAP-4	14	11	0.43	-4	56.4%	Stable	No
MW-1	14	12	0.45	-4	56.4%	Stable	No
MW-2	4	0	0.05	-1	50.0%	Non-Detect	No
MW-3	4	0	0.05	1	50.0%	Non-Detect	No
MW-4	4	0	0.06	-1	50.0%	Non-Detect	No
MW-5	4	2	0.61	1	50.0%	No Trend	No
MW-6	14	12	0.42	10	68.6%	No Trend	No
MW-7R	14	13	0.47	4	56.4%	No Trend	No
MW-8	14	9	0.43	-37	97.6%	Decreasing	Yes
MW-9	13	1	0.36	-5	59.4%	Stable	No
MW-10	4	0	0.00	0	37.5%	Non-Detect	No
MW-11	4	0	0.01	1	50.0%	Non-Detect	No
MW-12	4	0	0.05	-1	50.0%	Non-Detect	No
MW-14	4	4	0.54	0	37.5%	Stable	No
MW-15	4	0	0.05	-1	50.0%	Non-Detect	No
MW-16	4	3	0.43	4	83.3%	No Trend	No
MW-17	4	0	0.05	-1	50.0%	Non-Detect	No
MW-19	4	0	0.02	-1	50.0%	Non-Detect	No
MW-22	4	0	0.05	-1	50.0%	Non-Detect	No
MW-24	4	0	0.02	1	50.0%	Non-Detect	No
MW-26	4	4	1.10	6	95.8%	Increasing	Yes
MW-32	15	1	0.27	-7	61.5%	Stable	No
MW-33	14	7	0.41	-28	92.9%	Probably Decreasing	No
MW-34	15	2	0.31	-24	87.0%	Stable	No
MW-36	15	15	0.79	34	94.9%	Probably Increasing	No
MW-40	4	0	0.03	1	50.0%	Non-Detect	No
MW-42	4	0	0.00	0	37.5%	Non-Detect	No
MW-47	4	4	0.29	2	62.5%	No Trend	No
MW-48	14	0	0.23	-19	83.5%	Non-Detect	No
MW-49	4	0	0.02	1	50.0%	Non-Detect	No
MW-50	14	0	0.23	-15	77.5%	Non-Detect	No
MW-51	14	0	0.23	1	50.0%	Non-Detect	No
MW-53	5	0	0.05	-1	50.0%	Non-Detect	No
MW-54	5	1	0.39	1	50.0%	No Trend	No
MW-55	15	13	1.52	3	53.9%	No Trend	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
MW-56	14	13	1.63	13	74.1%	No Trend	No
MW-57	4	0	0.01	1	50.0%	Non-Detect	No
MW-58	14	13	0.40	45	99.3%	Increasing	Yes
MW-59	4	0	0.02	1	50.0%	Non-Detect	No
MW-74	4	0	0.03	1	50.0%	Non-Detect	No
MW-75	14	6	0.33	6	60.6%	No Trend	No
MW-76	14	13	0.57	-12	72.3%	Stable	No
MW-86	14	12	0.92	-41	98.7%	Decreasing	Yes
MW-87	4	1	0.43	-4	83.3%	Stable	No
MW-88	4	0	0.05	-1	50.0%	Non-Detect	No
MW-93	10	10	2.65	16	90.7%	Probably Increasing	No
MW-94	14	14	0.52	-20	84.8%	Stable	No
MW-103	14	14	0.80	-15	77.5%	Stable	No
MW-104	14	0	0.23	0	47.8%	Non-Detect	No
MW-105	14	13	0.40	-3	54.3%	Stable	No
MW-106	13	1	0.35	-4	57.1%	Stable	No
MW-107	14	4	0.41	7	62.6%	No Trend	No
MW-108	14	7	0.64	-51	99.8%	Decreasing	Yes
MW-109	14	1	0.33	0	47.8%	Stable	No
MW-133	14	13	0.64	14	75.8%	No Trend	No
MW-134	14	0	0.23	-15	77.5%	Non-Detect	No
MW-135	15	0	0.22	-10	66.9%	Non-Detect	No
MW-136	14	0	0.22	0	47.8%	Non-Detect	No
MW-137	14	1	2.23	3	54.3%	No Trend	No
TAP-1	4	0	0.05	-1	50.0%	Non-Detect	No
TAP-2	4	0	0.05	-1	50.0%	Non-Detect	No
TAP-3	4	0	0.03	-3	72.9%	Non-Detect	No
TAP-4	14	12	0.67	-18	82.1%	Stable	No
TAP-5	4	0	0.06	-3	72.9%	Non-Detect	No
TAR-1	7	4	0.94	-5	71.9%	Stable	No
TAR-2	7	6	2.48	-9	88.1%	No Trend	No
TAR-3	7	6	2.48	-7	80.9%	No Trend	No
TAR-4	7	6	0.43	10	90.7%	Probably Increasing	No
VAP-1	4	4	0.44	2	62.5%	No Trend	No
VAP-2	4	3	1.02	0	37.5%	No Trend	No
VAP-3	4	4	1.06	2	62.5%	No Trend	No
VAP-4	4	4	0.53	-6	95.8%	Decreasing	Yes
VAR-1	5	1	2.23	5	82.1%	No Trend	No
VAR-2	7	6	1.66	-11	93.2%	Probably Decreasing	No
VAR-3	7	7	0.56	-7	80.9%	Stable	No
VP-01	3	3	0.00	0	0.0%	Insufficient Data	No
VP-02	2	2	0.00	0	0.0%	Insufficient Data	No
VP-03	2	2	0.00	0	0.0%	Insufficient Data	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>Bis(2-chloroethoxy) methane (BCEM)</i>							
ARW-1	15	15	0.62	-44	98.4%	Decreasing	Yes
ARW-2	15	15	0.40	-32	93.7%	Probably Decreasing	No
ARW-3	14	14	0.80	-17	80.6%	Stable	No
ARW-4	14	14	0.45	-32	95.5%	Decreasing	Yes
ARW-5	14	14	0.40	8	64.6%	No Trend	No
LAP-2	14	0	1.48	-12	72.3%	Non-Detect	No
LAP-3	14	1	1.41	0	47.8%	No Trend	No
LAP-4	14	11	1.04	26	91.3%	Probably Increasing	No
MW-1	14	14	0.29	-33	96.0%	Decreasing	Yes
MW-2	4	0	0.05	-1	50.0%	Non-Detect	No
MW-3	4	0	0.05	1	50.0%	Non-Detect	No
MW-4	4	2	0.52	-2	62.5%	Stable	No
MW-5	4	0	0.00	0	37.5%	Non-Detect	No
MW-6	14	14	0.54	29	93.7%	Probably Increasing	No
MW-7R	14	13	1.09	-15	77.5%	No Trend	No
MW-8	14	14	0.74	-36	97.3%	Decreasing	Yes
MW-9	13	11	1.50	12	74.5%	No Trend	No
MW-10	4	1	0.40	1	50.0%	No Trend	No
MW-11	4	0	0.01	1	50.0%	Non-Detect	No
MW-12	4	0	0.05	-1	50.0%	Non-Detect	No
MW-14	4	0	0.01	1	50.0%	Non-Detect	No
MW-15	4	0	0.05	-1	50.0%	Non-Detect	No
MW-16	4	0	0.01	-1	50.0%	Non-Detect	No
MW-17	4	0	0.05	-1	50.0%	Non-Detect	No
MW-19	4	0	0.02	-1	50.0%	Non-Detect	No
MW-22	4	0	0.05	-1	50.0%	Non-Detect	No
MW-24	4	0	0.02	1	50.0%	Non-Detect	No
MW-26	4	2	0.86	6	95.8%	Increasing	Yes
MW-32	15	0	1.46	-7	61.5%	Non-Detect	No
MW-33	14	0	1.47	-2	52.2%	Non-Detect	No
MW-34	15	1	1.37	20	82.3%	No Trend	No
MW-36	15	14	1.51	-8	63.3%	No Trend	No
MW-40	4	0	0.03	1	50.0%	Non-Detect	No
MW-42	4	0	0.00	0	37.5%	Non-Detect	No
MW-47	4	0	0.01	1	50.0%	Non-Detect	No
MW-48	14	1	0.02	-11	70.5%	Stable	No
MW-49	4	0	0.02	1	50.0%	Non-Detect	No
MW-50	14	0	1.47	-8	64.6%	Non-Detect	No
MW-51	14	0	1.47	6	60.6%	Non-Detect	No
MW-53	5	1	0.38	-1	50.0%	Stable	No
MW-54	5	1	1.26	1	50.0%	No Trend	No
MW-55	15	15	0.45	-22	84.8%	Stable	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
MW-56	14	14	1.43	5	58.5%	No Trend	No
MW-57	4	0	0.01	1	50.0%	Non-Detect	No
MW-58	14	0	1.44	14	75.8%	Non-Detect	No
MW-59	4	0	0.02	1	50.0%	Non-Detect	No
MW-74	4	0	0.03	1	50.0%	Non-Detect	No
MW-75	14	11	0.83	-46	99.4%	Decreasing	Yes
MW-76	14	2	1.41	20	84.8%	No Trend	No
MW-86	14	14	1.05	-47	99.5%	Decreasing	Yes
MW-87	4	0	0.06	-1	50.0%	Non-Detect	No
MW-88	4	0	0.05	-1	50.0%	Non-Detect	No
MW-93	10	10	3.13	10	78.4%	No Trend	No
MW-94	14	14	0.54	2	52.2%	No Trend	No
MW-103	14	13	0.78	-40	98.5%	Decreasing	Yes
MW-104	14	1	1.45	15	77.5%	No Trend	No
MW-105	14	13	0.88	-33	96.0%	Decreasing	Yes
MW-106	13	1	0.19	-3	54.8%	Stable	No
MW-107	14	7	3.33	-1	50.0%	No Trend	No
MW-108	14	0	1.46	2	52.2%	Non-Detect	No
MW-109	14	14	0.35	-70	100.0%	Decreasing	Yes
MW-133	14	14	0.72	-72	100.0%	Decreasing	Yes
MW-134	14	0	1.48	-10	68.6%	Non-Detect	No
MW-135	15	0	1.47	-5	57.7%	Non-Detect	No
MW-136	14	1	3.01	3	54.3%	No Trend	No
MW-137	14	3	2.75	5	58.5%	No Trend	No
TAP-1	4	0	0.05	-1	50.0%	Non-Detect	No
TAP-2	4	0	0.05	-1	50.0%	Non-Detect	No
TAP-3	4	0	0.03	-3	72.9%	Non-Detect	No
TAP-4	14	7	2.17	-43	99.0%	Decreasing	Yes
TAP-5	4	0	0.06	-3	72.9%	Non-Detect	No
TAR-1	7	7	1.21	-9	88.1%	No Trend	No
TAR-2	7	6	0.56	-13	96.5%	Decreasing	Yes
TAR-3	7	6	0.69	5	71.9%	No Trend	No
TAR-4	7	7	0.33	10	90.7%	Probably Increasing	No
VAP-1	4	4	1.01	-2	62.5%	No Trend	No
VAP-2	4	4	1.20	-1	50.0%	No Trend	No
VAP-3	4	4	1.97	-2	62.5%	No Trend	No
VAP-4	4	4	0.77	0	37.5%	Stable	No
VAR-1	5	2	2.18	7	92.1%	Probably Increasing	No
VAR-2	7	4	1.38	-8	84.5%	No Trend	No
VAR-3	7	7	1.23	5	71.9%	No Trend	No
VP-01	3	3	0.00	0	0.0%	Insufficient Data	No
VP-02	2	2	0.00	0	0.0%	Insufficient Data	No
VP-03	2	2	0.00	0	0.0%	Insufficient Data	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>Bis(2-chloroethyl) ether (BCEE)</i>							
ARW-1	15	15	0.64	-51	99.4%	Decreasing	Yes
ARW-2	15	15	0.78	-44	98.4%	Decreasing	Yes
ARW-3	14	14	1.28	-35	96.9%	Decreasing	Yes
ARW-4	14	14	0.86	-46	99.4%	Decreasing	Yes
ARW-5	14	12	0.54	-11	70.5%	Stable	No
LAP-2	14	0	1.48	-12	72.3%	Non-Detect	No
LAP-3	14	0	1.41	0	47.8%	Non-Detect	No
LAP-4	14	2	2.00	6	60.6%	No Trend	No
MW-1	14	13	0.29	-14	75.8%	Stable	No
MW-2	4	0	0.05	-1	50.0%	Non-Detect	No
MW-3	4	0	0.05	1	50.0%	Non-Detect	No
MW-4	4	0	0.06	-1	50.0%	Non-Detect	No
MW-5	4	0	0.00	0	37.5%	Non-Detect	No
MW-6	14	0	1.47	3	54.3%	Non-Detect	No
MW-7R	14	6	1.11	4	56.4%	No Trend	No
MW-8	14	0	1.47	3	54.3%	Non-Detect	No
MW-9	13	0	1.47	3	54.8%	Non-Detect	No
MW-10	4	0	0.00	0	37.5%	Non-Detect	No
MW-11	4	0	0.01	1	50.0%	Non-Detect	No
MW-12	4	0	0.05	-1	50.0%	Non-Detect	No
MW-14	4	0	0.01	1	50.0%	Non-Detect	No
MW-15	4	0	0.05	-1	50.0%	Non-Detect	No
MW-16	4	0	0.01	-1	50.0%	Non-Detect	No
MW-17	4	0	0.05	-1	50.0%	Non-Detect	No
MW-19	4	0	0.02	-1	50.0%	Non-Detect	No
MW-22	4	0	0.05	-1	50.0%	Non-Detect	No
MW-24	4	0	0.02	1	50.0%	Non-Detect	No
MW-26	4	0	1.66	1	50.0%	Non-Detect	No
MW-32	15	0	1.46	-7	61.5%	Non-Detect	No
MW-33	14	0	1.47	-2	52.2%	Non-Detect	No
MW-34	15	0	1.46	11	68.7%	Non-Detect	No
MW-36	15	12	0.69	24	87.0%	No Trend	No
MW-40	4	0	0.03	1	50.0%	Non-Detect	No
MW-42	4	0	0.00	0	37.5%	Non-Detect	No
MW-47	4	0	0.01	1	50.0%	Non-Detect	No
MW-48	14	0	1.47	-11	70.5%	Non-Detect	No
MW-49	4	0	0.02	1	50.0%	Non-Detect	No
MW-50	14	0	1.47	-8	64.6%	Non-Detect	No
MW-51	14	0	1.47	6	60.6%	Non-Detect	No
MW-53	5	0	0.05	-1	50.0%	Non-Detect	No
MW-54	5	0	0.42	1	50.0%	Non-Detect	No
MW-55	15	13	1.63	-17	78.2%	No Trend	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
MW-56	14	0	1.43	5	58.5%	Non-Detect	No
MW-57	4	0	0.01	1	50.0%	Non-Detect	No
MW-58	14	0	1.44	14	75.8%	Non-Detect	No
MW-59	4	0	0.02	1	50.0%	Non-Detect	No
MW-74	4	0	0.03	1	50.0%	Non-Detect	No
MW-75	14	1	1.49	8	64.6%	No Trend	No
MW-76	14	1	1.42	20	84.8%	No Trend	No
MW-86	14	9	1.62	8	64.6%	No Trend	No
MW-87	4	0	0.06	-1	50.0%	Non-Detect	No
MW-88	4	0	0.05	-1	50.0%	Non-Detect	No
MW-93	10	9	3.16	12	83.2%	No Trend	No
MW-94	14	13	0.53	-18	82.1%	Stable	No
MW-103	14	11	1.22	-20	84.8%	No Trend	No
MW-104	14	0	1.47	10	68.6%	Non-Detect	No
MW-105	14	9	1.06	-23	88.3%	No Trend	No
MW-106	13	0	1.48	13	76.4%	Non-Detect	No
MW-107	14	1	1.42	-10	68.6%	No Trend	No
MW-108	14	0	1.46	2	52.2%	Non-Detect	No
MW-109	14	3	1.32	-3	54.3%	No Trend	No
MW-133	14	3	1.35	-11	70.5%	No Trend	No
MW-134	14	0	1.48	-10	68.6%	Non-Detect	No
MW-135	15	0	1.47	-5	57.7%	Non-Detect	No
MW-136	14	0	1.47	9	66.6%	Non-Detect	No
MW-137	14	0	3.46	5	58.5%	Non-Detect	No
TAP-1	4	0	0.05	-1	50.0%	Non-Detect	No
TAP-2	4	0	0.05	-1	50.0%	Non-Detect	No
TAP-3	4	0	0.03	-3	72.9%	Non-Detect	No
TAP-4	14	0	1.47	-1	50.0%	Non-Detect	No
TAP-5	4	0	0.06	-3	72.9%	Non-Detect	No
TAR-1	7	0	1.50	11	93.2%	Non-Detect	No
TAR-2	7	1	2.48	-8	84.5%	No Trend	No
TAR-3	7	4	2.58	-5	71.9%	No Trend	No
TAR-4	7	2	1.63	-3	61.4%	No Trend	No
VAP-1	4	3	1.17	2	62.5%	No Trend	No
VAP-2	4	4	1.12	0	37.5%	No Trend	No
VAP-3	4	1	1.95	1	50.0%	No Trend	No
VAP-4	4	4	0.29	-2	62.5%	Stable	No
VAR-1	5	0	2.23	5	82.1%	Non-Detect	No
VAR-2	7	0	1.59	-5	71.9%	Non-Detect	No
VAR-3	7	2	1.99	-6	76.4%	No Trend	No
VP-01	3	3	0.00	0	0.0%	Insufficient Data	No
VP-02	2	2	0.00	0	0.0%	Insufficient Data	No
VP-03	2	2	0.00	0	0.0%	Insufficient Data	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<b>UPPER CITRONELLE AQUIFER</b>							
<i>1,2,3-Trichloropropane</i>							
MW-18	4	0	0.00	0	37.5%	Non-Detect	No
MW-20	4	0	0.00	0	37.5%	Non-Detect	No
MW-23	13	0	0.00	0	47.6%	Non-Detect	No
MW-27R	14	0	0.83	7	62.6%	Non-Detect	No
MW-28	14	0	0.83	7	62.6%	Non-Detect	No
MW-29	4	0	0.00	0	37.5%	Non-Detect	No
MW-30	4	3	1.09	0	37.5%	No Trend	No
MW-31	11	5	1.63	5	61.9%	No Trend	No
MW-35	14	0	0.83	7	62.6%	Non-Detect	No
MW-37	5	0	0.00	0	40.8%	Non-Detect	No
MW-38	4	0	0.00	0	37.5%	Non-Detect	No
MW-41	4	0	0.00	0	37.5%	Non-Detect	No
MW-60	4	0	0.00	0	37.5%	Non-Detect	No
MW-61	4	0	0.00	0	37.5%	Non-Detect	No
MW-62	15	12	0.73	-69	100.0%	Decreasing	Yes
MW-63	15	12	2.40	-32	93.7%	Probably Decreasing	No
MW-64	15	0	0.82	8	63.3%	Non-Detect	No
MW-65	14	0	0.83	7	62.6%	Non-Detect	No
MW-66	4	0	0.00	0	37.5%	Non-Detect	No
MW-67	14	0	0.83	7	62.6%	Non-Detect	No
MW-68	14	0	0.83	7	62.6%	Non-Detect	No
MW-69	11	0	0.00	0	46.9%	Non-Detect	No
MW-70	14	0	0.54	13	74.1%	Non-Detect	No
MW-77	4	0	0.00	0	37.5%	Non-Detect	No
MW-78	14	0	0.83	7	62.6%	Non-Detect	No
MW-79	10	0	0.90	3	56.9%	Non-Detect	No
MW-80	4	0	0.00	0	37.5%	Non-Detect	No
MW-81	4	0	0.00	0	37.5%	Non-Detect	No
MW-89	4	0	0.00	0	37.5%	Non-Detect	No
MW-90	4	0	0.00	0	37.5%	Non-Detect	No
MW-95	14	0	0.59	25	90.4%	Non-Detect	No
MW-96	14	0	0.83	7	62.6%	Non-Detect	No
MW-97	10	0	0.90	3	56.9%	Non-Detect	No
MW-110	14	0	0.83	7	62.6%	Non-Detect	No
MW-111	14	0	0.83	7	62.6%	Non-Detect	No
MW-112	4	0	0.00	0	37.5%	Non-Detect	No
MW-125	14	0	0.83	7	62.6%	Non-Detect	No
MW-126	14	0	0.83	7	62.6%	Non-Detect	No
MW-132	14	0	0.83	7	62.6%	Non-Detect	No
MW-138	14	9	1.14	20	84.8%	No Trend	No
MW-144	2	1	0.00	0	0.0%	Insufficient Data	No
UCRW-1	14	0	0.83	7	62.6%	Non-Detect	No
UCRW-2	14	9	0.65	-10	68.6%	Stable	No
UCRW-3	15	4	1.61	24	87.0%	No Trend	No
UCRW-4	14	14	0.97	-44	99.2%	Decreasing	Yes
UCRW-5	14	14	0.37	-25	90.4%	Probably Decreasing	No
VUCP-1	4	0	0.00	0	37.5%	Non-Detect	No
VUCR-1R	7	0	0.96	0	43.7%	Non-Detect	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>1,2-Dichloroethane (1,2-DCA)</i>							
MW-18	4	1	0.16	3	72.9%	No Trend	No
MW-20	4	0	0.00	0	37.5%	Non-Detect	No
MW-23	13	12	2.73	3	54.8%	No Trend	No
MW-27R	14	13	0.94	1	50.0%	No Trend	No
MW-28	14	0	0.00	0	47.8%	Non-Detect	No
MW-29	4	4	1.07	2	62.5%	No Trend	No
MW-30	4	4	0.85	-6	95.8%	Decreasing	Yes
MW-31	11	11	2.73	-6	64.8%	No Trend	No
MW-35	14	2	0.16	-19	83.5%	Stable	No
MW-37	5	3	0.96	3	67.5%	No Trend	No
MW-38	4	3	0.06	0	37.5%	Stable	No
MW-41	4	4	0.79	-6	95.8%	Decreasing	Yes
MW-60	4	0	0.00	0	37.5%	Non-Detect	No
MW-61	4	0	0.00	0	37.5%	Non-Detect	No
MW-62	15	15	0.52	-62	99.9%	Decreasing	Yes
MW-63	15	15	1.68	-41	97.7%	Decreasing	Yes
MW-64	15	2	0.64	-23	85.9%	Stable	No
MW-65	14	0	0.00	0	47.8%	Non-Detect	No
MW-66	4	0	0.00	0	37.5%	Non-Detect	No
MW-67	14	14	0.58	-48	99.6%	Decreasing	Yes
MW-68	14	0	0.00	0	47.8%	Non-Detect	No
MW-69	11	11	0.34	-29	98.7%	Decreasing	Yes
MW-70	14	14	0.54	-7	62.6%	Stable	No
MW-77	4	0	0.00	0	37.5%	Non-Detect	No
MW-78	14	1	0.10	3	54.3%	No Trend	No
MW-79	10	0	0.00	0	46.4%	Non-Detect	No
MW-80	4	0	0.00	0	37.5%	Non-Detect	No
MW-81	4	0	0.00	0	37.5%	Non-Detect	No
MW-89	4	0	0.00	0	37.5%	Non-Detect	No
MW-90	4	0	0.00	0	37.5%	Non-Detect	No
MW-95	14	14	0.26	19	83.5%	No Trend	No
MW-96	14	8	0.32	-38	97.9%	Decreasing	Yes
MW-97	10	0	0.00	0	46.4%	Non-Detect	No
MW-110	14	0	0.00	0	47.8%	Non-Detect	No
MW-111	14	0	0.00	0	47.8%	Non-Detect	No
MW-112	4	0	0.00	0	37.5%	Non-Detect	No
MW-125	14	1	0.21	3	54.3%	No Trend	No
MW-126	14	0	0.00	0	47.8%	Non-Detect	No
MW-132	14	0	0.00	0	47.8%	Non-Detect	No
MW-138	14	14	0.25	-18	82.1%	Stable	No
MW-144	2	2	0.00	0	0.0%	Insufficient Data	No
UCRW-1	14	8	2.22	10	68.6%	No Trend	No
UCRW-2	14	14	0.52	-59	100.0%	Decreasing	Yes
UCRW-3	15	15	1.64	14	73.7%	No Trend	No
UCRW-4	14	14	0.55	-42	98.9%	Decreasing	Yes
UCRW-5	14	14	0.42	-57	99.9%	Decreasing	Yes
VUCP-1	4	4	0.65	-4	83.3%	Stable	No
VUCR-1R	7	7	0.34	4	66.7%	No Trend	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>1,4-Dioxane</i>							
MW-18	4	0	0.01	-1	50.0%	Non-Detect	No
MW-20	4	0	0.05	-1	50.0%	Non-Detect	No
MW-23	13	12	0.85	8	66.2%	No Trend	No
MW-27R	14	13	0.39	-10	68.6%	Stable	No
MW-28	14	0	0.23	6	60.6%	Non-Detect	No
MW-29	4	4	0.99	2	62.5%	No Trend	No
MW-30	4	4	1.07	-4	83.3%	No Trend	No
MW-31	11	10	2.04	42	100.0%	Increasing	Yes
MW-35	14	6	0.59	24	89.4%	No Trend	No
MW-37	5	5	0.51	-4	75.8%	Stable	No
MW-38	4	0	0.02	1	50.0%	Non-Detect	No
MW-41	4	3	0.44	2	62.5%	No Trend	No
MW-60	4	0	0.01	1	50.0%	Non-Detect	No
MW-61	4	0	0.02	1	50.0%	Non-Detect	No
MW-62	15	6	0.46	11	68.7%	No Trend	No
MW-63	15	11	1.50	-19	81.0%	No Trend	No
MW-64	15	10	3.28	-9	65.1%	No Trend	No
MW-65	14	0	0.23	-4	56.4%	Non-Detect	No
MW-66	4	0	0.02	1	50.0%	Non-Detect	No
MW-67	14	7	0.44	-12	72.3%	Stable	No
MW-68	14	0	0.22	2	52.2%	Non-Detect	No
MW-69	11	9	0.52	1	50.0%	No Trend	No
MW-70	14	13	0.63	-28	92.9%	Probably Decreasing	No
MW-77	4	0	0.02	1	50.0%	Non-Detect	No
MW-78	14	0	0.23	10	68.6%	Non-Detect	No
MW-79	10	0	0.27	11	81.0%	Non-Detect	No
MW-80	4	0	0.02	1	50.0%	Non-Detect	No
MW-81	4	0	0.02	1	50.0%	Non-Detect	No
MW-89	4	0	0.01	1	50.0%	Non-Detect	No
MW-90	4	0	0.01	1	50.0%	Non-Detect	No
MW-95	14	11	0.50	-19	83.5%	Stable	No
MW-96	14	12	0.41	10	68.6%	No Trend	No
MW-97	10	0	0.42	17	92.2%	Non-Detect	No
MW-110	14	1	0.80	-12	72.3%	Stable	No
MW-111	14	0	0.23	-16	79.1%	Non-Detect	No
MW-112	4	0	0.03	-4	83.3%	Non-Detect	No
MW-125	14	1	0.28	-2	52.2%	Stable	No
MW-126	14	0	0.23	7	62.6%	Non-Detect	No
MW-132	14	0	0.22	11	70.5%	Non-Detect	No
MW-138	14	13	0.55	28	92.9%	Probably Increasing	No
MW-144	2	2	0.00	0	0.0%	Insufficient Data	No
UCRW-1	14	7	2.84	-29	93.7%	Probably Decreasing	No
UCRW-2	14	13	0.75	-27	92.1%	Probably Decreasing	No
UCRW-3	15	15	0.50	-38	96.7%	Decreasing	Yes
UCRW-4	14	14	0.46	-38	97.9%	Decreasing	Yes
UCRW-5	14	13	1.23	1	50.0%	No Trend	No
VUCP-1	4	3	0.47	-1	50.0%	Stable	No
VUCR-1R	7	6	0.41	13	96.5%	Increasing	Yes

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>Bis(2-chloroethoxy) methane (BCEM)</i>							
MW-18	4	0	0.01	-1	50.0%	Non-Detect	No
MW-20	4	0	0.05	-1	50.0%	Non-Detect	No
MW-23	13	13	1.49	-8	66.2%	No Trend	No
MW-27R	14	14	0.73	-74	100.0%	Decreasing	Yes
MW-28	14	6	1.10	-4	56.4%	No Trend	No
MW-29	4	4	1.00	4	83.3%	No Trend	No
MW-30	4	4	0.13	-2	62.5%	Stable	No
MW-31	11	11	1.09	30	99.0%	Increasing	Yes
MW-35	14	13	0.53	38	97.9%	Increasing	Yes
MW-37	5	5	0.42	-6	88.3%	Stable	No
MW-38	4	4	0.78	0	37.5%	Stable	No
MW-41	4	4	1.02	-4	83.3%	No Trend	No
MW-60	4	1	0.35	-1	50.0%	Stable	No
MW-61	4	0	0.02	1	50.0%	Non-Detect	No
MW-62	15	15	0.53	-69	100.0%	Decreasing	Yes
MW-63	15	13	1.79	-24	87.0%	No Trend	No
MW-64	15	15	1.02	7	61.5%	No Trend	No
MW-65	14	2	1.69	-19	83.5%	No Trend	No
MW-66	4	0	0.02	1	50.0%	Non-Detect	No
MW-67	14	14	1.03	-69	100.0%	Decreasing	Yes
MW-68	14	13	0.55	-22	87.2%	Stable	No
MW-69	11	11	0.42	10	75.3%	No Trend	No
MW-70	14	11	0.90	-16	79.1%	Stable	No
MW-77	4	0	0.02	1	50.0%	Non-Detect	No
MW-78	14	13	0.94	-61	100.0%	Decreasing	Yes
MW-79	10	0	1.51	15	89.2%	Non-Detect	No
MW-80	4	2	0.61	-5	89.6%	Stable	No
MW-81	4	0	0.02	1	50.0%	Non-Detect	No
MW-89	4	0	0.01	1	50.0%	Non-Detect	No
MW-90	4	1	1.29	-1	50.0%	No Trend	No
MW-95	14	14	0.59	-68	100.0%	Decreasing	Yes
MW-96	14	14	0.59	-27	92.1%	Probably Decreasing	No
MW-97	10	0	1.42	18	93.4%	Non-Detect	No
MW-110	14	6	1.97	-26	91.3%	Probably Decreasing	No
MW-111	14	0	1.47	-10	68.6%	Non-Detect	No
MW-112	4	0	0.03	-4	83.3%	Non-Detect	No
MW-125	14	2	1.27	11	70.5%	No Trend	No
MW-126	14	0	1.48	15	77.5%	Non-Detect	No
MW-132	14	2	0.13	25	90.4%	Probably Increasing	No
MW-138	14	13	0.47	-7	62.6%	Stable	No
MW-144	2	2	0.00	0	0.0%	Insufficient Data	No
UCRW-1	14	14	3.02	-57	99.9%	Decreasing	Yes
UCRW-2	14	14	0.80	42	98.9%	Increasing	Yes
UCRW-3	15	15	0.64	36	95.9%	Increasing	Yes
UCRW-4	14	14	0.29	6	60.6%	No Trend	No
UCRW-5	14	14	0.51	8	64.6%	No Trend	No
VUCP-1	4	3	0.68	-6	95.8%	Decreasing	Yes
VUCR-1R	7	7	0.42	9	88.1%	No Trend	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>Bis(2-chloroethyl) ether (BCEE)</i>							
MW-18	4	0	0.01	-1	50.0%	Non-Detect	No
MW-20	4	0	0.05	-1	50.0%	Non-Detect	No
MW-23	13	13	0.64	-9	68.4%	Stable	No
MW-27R	14	11	0.74	-35	96.9%	Decreasing	Yes
MW-28	14	1	1.40	0	47.8%	No Trend	No
MW-29	4	2	1.01	5	89.6%	No Trend	No
MW-30	4	4	0.69	-6	95.8%	Decreasing	Yes
MW-31	11	9	0.96	29	98.7%	Increasing	Yes
MW-35	14	9	1.29	60	100.0%	Increasing	Yes
MW-37	5	5	0.45	-4	75.8%	Stable	No
MW-38	4	0	0.02	1	50.0%	Non-Detect	No
MW-41	4	0	0.02	1	50.0%	Non-Detect	No
MW-60	4	0	0.01	1	50.0%	Non-Detect	No
MW-61	4	0	0.02	1	50.0%	Non-Detect	No
MW-62	15	14	0.73	-61	99.9%	Decreasing	Yes
MW-63	15	13	2.10	-20	82.3%	No Trend	No
MW-64	15	13	1.47	5	57.7%	No Trend	No
MW-65	14	0	1.48	0	47.8%	Non-Detect	No
MW-66	4	0	0.02	1	50.0%	Non-Detect	No
MW-67	14	1	1.47	26	91.3%	Probably Increasing	No
MW-68	14	5	1.21	-8	64.6%	No Trend	No
MW-69	11	10	0.34	-32	99.4%	Decreasing	Yes
MW-70	14	1	1.36	6	60.6%	No Trend	No
MW-77	4	0	0.02	1	50.0%	Non-Detect	No
MW-78	14	5	1.20	-6	60.6%	No Trend	No
MW-79	10	0	1.51	15	89.2%	Non-Detect	No
MW-80	4	0	0.02	1	50.0%	Non-Detect	No
MW-81	4	0	0.02	1	50.0%	Non-Detect	No
MW-89	4	0	0.01	1	50.0%	Non-Detect	No
MW-90	4	0	0.01	1	50.0%	Non-Detect	No
MW-95	14	0	1.47	-4	56.4%	Non-Detect	No
MW-96	14	8	1.00	-22	87.2%	Stable	No
MW-97	10	1	1.43	15	89.2%	No Trend	No
MW-110	14	0	1.41	17	80.6%	Non-Detect	No
MW-111	14	0	1.47	-10	68.6%	Non-Detect	No
MW-112	4	0	0.03	-4	83.3%	Non-Detect	No
MW-125	14	2	1.24	9	66.6%	No Trend	No
MW-126	14	0	1.48	15	77.5%	Non-Detect	No
MW-132	14	2	1.48	16	79.1%	No Trend	No
MW-138	14	13	0.39	-14	75.8%	Stable	No
MW-144	2	2	0.00	0	0.0%	Insufficient Data	No
UCRW-1	14	1	1.48	2	52.2%	No Trend	No
UCRW-2	14	12	0.57	4	56.4%	No Trend	No
UCRW-3	15	14	0.46	-47	99.0%	Decreasing	Yes
UCRW-4	14	14	0.37	-35	96.9%	Decreasing	Yes
UCRW-5	14	14	1.05	-25	90.4%	Probably Decreasing	No
VUCP-1	4	3	0.77	-6	95.8%	Decreasing	Yes
VUCR-1R	7	5	1.40	9	88.1%	No Trend	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<b>LOWER CITRONELLE AQUIFER</b>							
<i>1,2,3-Trichloropropane</i>							
LCRW-1	14	0	0.83	7	62.6%	Non-Detect	No
LCRW-2	14	0	0.83	7	62.6%	Non-Detect	No
LCRW-3	14	0	0.83	7	62.6%	Non-Detect	No
LCRW-4	14	0	0.83	7	62.6%	Non-Detect	No
LCRW-5	14	0	0.83	7	62.6%	Non-Detect	No
LCRW-6	14	12	1.33	-74	100.0%	Decreasing	Yes
LCRW-7	14	0	0.83	7	62.6%	Non-Detect	No
LCRW-8	15	12	2.26	-55	99.7%	Decreasing	Yes
LCRW-9	14	13	0.85	-51	99.8%	Decreasing	Yes
MW-21	4	0	0.00	0	37.5%	Non-Detect	No
MW-25	1	0	0.00	0	0.0%	Non-Detect	No
MW-25R	4	0	1.00	1	50.0%	Non-Detect	No
MW-44	5	0	0.00	0	40.8%	Non-Detect	No
MW-45	14	0	0.83	7	62.6%	Non-Detect	No
MW-46	8	0	0.87	-3	59.4%	Non-Detect	No
MW-72	4	0	0.00	0	37.5%	Non-Detect	No
MW-73	4	0	0.00	0	37.5%	Non-Detect	No
MW-82R	4	0	0.00	0	37.5%	Non-Detect	No
MW-84	14	0	0.83	7	62.6%	Non-Detect	No
MW-85	5	0	0.00	0	40.8%	Non-Detect	No
MW-91	8	0	0.94	1	50.0%	Non-Detect	No
MW-92	14	8	2.41	0	47.8%	No Trend	No
MW-98	14	0	0.83	7	62.6%	Non-Detect	No
MW-99	10	8	0.66	-39	100.0%	Decreasing	Yes
MW-100	5	0	0.00	0	40.8%	Non-Detect	No
MW-101	14	0	0.83	7	62.6%	Non-Detect	No
MW-102	15	0	0.82	8	63.3%	Non-Detect	No
MW-113	14	5	1.59	-23	88.3%	No Trend	No
MW-114	14	0	0.83	7	62.6%	Non-Detect	No
MW-115	14	0	0.83	7	62.6%	Non-Detect	No
MW-116	4	0	0.00	0	37.5%	Non-Detect	No
MW-117	14	0	0.83	7	62.6%	Non-Detect	No
MW-118	4	0	0.00	0	37.5%	Non-Detect	No
MW-119	4	0	0.00	0	37.5%	Non-Detect	No
MW-123	14	0	0.87	5	58.5%	Non-Detect	No
MW-128	14	0	0.83	7	62.6%	Non-Detect	No
MW-129	15	0	0.82	6	59.6%	Non-Detect	No
MW-130	14	0	0.83	7	62.6%	Non-Detect	No
MW-131	14	0	0.83	7	62.6%	Non-Detect	No
MW-139	14	0	0.83	7	62.6%	Non-Detect	No
MW-140	14	0	0.83	7	62.6%	Non-Detect	No
MW-141	14	0	0.83	7	62.6%	Non-Detect	No
MW-142	8	0	0.94	1	50.0%	Non-Detect	No
MW-143	8	2	0.84	-4	64.0%	Stable	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>1,2-Dichloroethane (1,2-DCA)</i>							
LCRW-1	14	11	0.54	-4	56.4%	Stable	No
LCRW-2	14	14	0.13	21	86.0%	No Trend	No
LCRW-3	14	14	0.56	-73	100.0%	Decreasing	Yes
LCRW-4	14	11	0.75	73	100.0%	Increasing	Yes
LCRW-5	14	14	3.42	39	98.2%	Increasing	Yes
LCRW-6	14	14	0.77	-66	100.0%	Decreasing	Yes
LCRW-7	14	12	1.54	-3	54.3%	No Trend	No
LCRW-8	15	15	0.38	-33	94.3%	Probably Decreasing	No
LCRW-9	14	14	0.41	-57	99.9%	Decreasing	Yes
MW-21	4	3	0.68	0	37.5%	Stable	No
MW-25	1	1	0.00	0	0.0%	Insufficient Data	No
MW-25R	4	4	0.60	0	37.5%	Stable	No
MW-44	5	1	1.66	0	40.8%	No Trend	No
MW-45	14	6	0.44	29	93.7%	Probably Increasing	No
MW-46	8	7	1.81	-18	98.4%	Decreasing	Yes
MW-72	4	0	0.00	0	37.5%	Non-Detect	No
MW-73	4	0	0.00	0	37.5%	Non-Detect	No
MW-82R	4	0	0.00	0	37.5%	Non-Detect	No
MW-84	14	7	0.29	-26	91.3%	Probably Decreasing	No
MW-85	5	5	0.26	-5	82.1%	Stable	No
MW-91	8	0	0.00	0	45.2%	Non-Detect	No
MW-92	14	14	1.37	0	47.8%	No Trend	No
MW-98	14	0	0.00	0	47.8%	Non-Detect	No
MW-99	10	10	0.64	-18	93.4%	Probably Decreasing	No
MW-100	5	5	0.96	0	40.8%	Stable	No
MW-101	14	10	0.72	-58	100.0%	Decreasing	Yes
MW-102	15	14	0.26	-9	65.1%	Stable	No
MW-113	14	14	0.75	-71	100.0%	Decreasing	Yes
MW-114	14	13	1.04	-47	99.5%	Decreasing	Yes
MW-115	14	14	0.60	28	92.9%	Probably Increasing	No
MW-116	4	2	0.76	3	72.9%	No Trend	No
MW-117	14	0	0.00	0	47.8%	Non-Detect	No
MW-118	4	0	0.00	0	37.5%	Non-Detect	No
MW-119	4	0	0.00	0	37.5%	Non-Detect	No
MW-123	14	14	0.65	-23	88.3%	Stable	No
MW-128	14	1	0.01	-5	58.5%	Stable	No
MW-129	15	10	0.81	-25	88.0%	Stable	No
MW-130	14	0	0.00	0	47.8%	Non-Detect	No
MW-131	14	0	0.00	0	47.8%	Non-Detect	No
MW-139	14	0	0.00	0	47.8%	Non-Detect	No
MW-140	14	6	0.67	-17	80.6%	Stable	No
MW-141	14	13	0.27	-64	100.0%	Decreasing	Yes
MW-142	8	0	0.00	0	45.2%	Non-Detect	No
MW-143	8	8	0.70	-2	54.8%	Stable	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>1,4-Dioxane</i>							
LCRW-1	14	0	0.76	-4	56.4%	Non-Detect	No
LCRW-2	14	0	0.56	29	93.7%	Non-Detect	No
LCRW-3	14	4	0.65	26	91.3%	Probably Increasing	No
LCRW-4	14	2	1.26	14	75.8%	No Trend	No
LCRW-5	14	3	0.31	-7	62.6%	Stable	No
LCRW-6	14	14	0.51	-38	97.9%	Decreasing	Yes
LCRW-7	14	12	1.12	-21	86.0%	No Trend	No
LCRW-8	15	14	0.62	-25	88.0%	Stable	No
LCRW-9	14	13	0.47	-33	96.0%	Decreasing	Yes
MW-21	4	3	0.37	0	37.5%	Stable	No
MW-25	1	1	0.00	0	0.0%	Insufficient Data	No
MW-25R	4	4	0.54	0	37.5%	Stable	No
MW-44	5	0	0.04	-1	50.0%	Non-Detect	No
MW-45	14	1	0.26	-4	56.4%	Stable	No
MW-46	8	7	0.28	-9	83.2%	Stable	No
MW-72	4	0	0.02	1	50.0%	Non-Detect	No
MW-73	4	0	0.02	1	50.0%	Non-Detect	No
MW-82R	4	0	0.02	1	50.0%	Non-Detect	No
MW-84	14	4	0.30	-1	50.0%	Stable	No
MW-85	5	1	2.16	-1	50.0%	No Trend	No
MW-91	8	1	0.38	7	76.4%	No Trend	No
MW-92	14	11	1.33	26	91.3%	Probably Increasing	No
MW-98	14	1	0.23	1	50.0%	No Trend	No
MW-99	10	10	0.44	-10	78.4%	Stable	No
MW-100	5	5	0.85	2	59.2%	No Trend	No
MW-101	14	1	0.73	30	94.4%	Probably Increasing	No
MW-102	15	1	0.23	-5	57.7%	Stable	No
MW-113	14	13	0.37	-10	68.6%	Stable	No
MW-114	14	14	0.90	-47	99.5%	Decreasing	Yes
MW-115	14	13	0.99	-11	70.5%	Stable	No
MW-116	4	2	0.41	-1	50.0%	Stable	No
MW-117	14	0	0.23	2	52.2%	Non-Detect	No
MW-118	4	0	0.02	1	50.0%	Non-Detect	No
MW-119	4	0	0.02	1	50.0%	Non-Detect	No
MW-123	14	13	0.44	23	88.3%	No Trend	No
MW-128	14	0	0.23	9	66.6%	Non-Detect	No
MW-129	15	2	0.35	25	88.0%	No Trend	No
MW-130	14	1	0.34	-2	52.2%	Stable	No
MW-131	14	0	0.23	-22	87.2%	Non-Detect	No
MW-139	14	1	0.23	7	62.6%	No Trend	No
MW-140	14	2	0.37	-8	64.6%	Stable	No
MW-141	14	13	0.47	-19	83.5%	Stable	No
MW-142	8	2	0.52	18	98.4%	Increasing	Yes
MW-143	8	8	0.63	-1	50.0%	Stable	No

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>Bis(2-chloroethoxy) methane (BCEM)</i>							
LCRW-1	14	14	1.09	-17	80.6%	No Trend	No
LCRW-2	14	14	0.29	-12	72.3%	Stable	No
LCRW-3	14	13	0.45	-51	99.8%	Decreasing	Yes
LCRW-4	14	14	0.98	0	47.8%	Stable	No
LCRW-5	14	14	0.63	52	99.8%	Increasing	Yes
LCRW-6	14	14	1.10	-59	100.0%	Decreasing	Yes
LCRW-7	14	14	0.91	0	47.8%	Stable	No
LCRW-8	15	15	0.63	-35	95.4%	Decreasing	Yes
LCRW-9	14	14	0.41	-36	97.3%	Decreasing	Yes
MW-21	4	0	0.00	0	37.5%	Non-Detect	No
MW-25	1	1	0.00	0	0.0%	Insufficient Data	No
MW-25R	4	4	0.41	0	37.5%	Stable	No
MW-44	5	2	1.07	3	67.5%	No Trend	No
MW-45	14	11	0.69	11	70.5%	No Trend	No
MW-46	8	8	1.59	-18	98.4%	Decreasing	Yes
MW-72	4	0	0.02	1	50.0%	Non-Detect	No
MW-73	4	2	0.74	-3	72.9%	Stable	No
MW-82R	4	0	0.02	1	50.0%	Non-Detect	No
MW-84	14	13	1.82	-47	99.5%	Decreasing	Yes
MW-85	5	5	2.18	4	75.8%	No Trend	No
MW-91	8	1	1.57	4	64.0%	No Trend	No
MW-92	14	14	1.42	14	75.8%	No Trend	No
MW-98	14	14	0.31	-10	68.6%	Stable	No
MW-99	10	10	1.02	-17	92.2%	Probably Decreasing	No
MW-100	5	5	0.54	0	40.8%	Stable	No
MW-101	14	14	0.95	-53	99.8%	Decreasing	Yes
MW-102	15	10	1.58	-17	78.2%	No Trend	No
MW-113	14	14	0.75	-63	100.0%	Decreasing	Yes
MW-114	14	14	0.98	-44	99.2%	Decreasing	Yes
MW-115	14	14	0.74	-18	82.1%	Stable	No
MW-116	4	3	0.62	-4	83.3%	Stable	No
MW-117	14	1	0.10	10	68.6%	No Trend	No
MW-118	4	0	0.02	1	50.0%	Non-Detect	No
MW-119	4	0	0.02	1	50.0%	Non-Detect	No
MW-123	14	14	0.34	7	62.6%	No Trend	No
MW-128	14	0	1.47	14	75.8%	Non-Detect	No
MW-129	15	9	2.06	-20	82.3%	No Trend	No
MW-130	14	2	0.48	-12	72.3%	Stable	No
MW-131	14	0	1.46	-12	72.3%	Non-Detect	No
MW-139	14	2	1.23	2	52.2%	No Trend	No
MW-140	14	9	3.06	-37	97.6%	Decreasing	Yes
MW-141	14	13	0.49	-30	94.4%	Probably Decreasing	No
MW-142	8	3	0.79	-5	68.3%	Stable	No
MW-143	8	8	0.41	20	99.3%	Increasing	Yes

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<i>Bis(2-chloroethyl) ether (BCEE)</i>							
LCRW-1	14	5	1.73	-14	75.8%	No Trend	No
LCRW-2	14	14	0.29	-39	98.2%	Decreasing	Yes
LCRW-3	14	14	0.44	-76	100.0%	Decreasing	Yes
LCRW-4	14	12	0.64	61	100.0%	Increasing	Yes
LCRW-5	14	0	1.47	14	75.8%	Non-Detect	No
LCRW-6	14	14	0.58	-73	100.0%	Decreasing	Yes
LCRW-7	14	12	0.64	-21	86.0%	Stable	No
LCRW-8	15	14	0.59	-31	93.0%	Probably Decreasing	No
LCRW-9	14	14	0.28	-30	94.4%	Probably Decreasing	No
MW-21	4	0	0.00	0	37.5%	Non-Detect	No
MW-25	1	1	0.00	0	0.0%	Insufficient Data	No
MW-25R	4	4	0.47	0	37.5%	Stable	No
MW-44	5	0	0.04	-1	50.0%	Non-Detect	No
MW-45	14	0	1.47	4	56.4%	Non-Detect	No
MW-46	8	8	1.62	-23	99.9%	Decreasing	Yes
MW-72	4	0	0.02	1	50.0%	Non-Detect	No
MW-73	4	0	0.02	1	50.0%	Non-Detect	No
MW-82R	4	0	0.02	1	50.0%	Non-Detect	No
MW-84	14	1	1.47	11	70.5%	No Trend	No
MW-85	5	5	2.10	-2	59.2%	No Trend	No
MW-91	8	0	1.50	8	80.1%	Non-Detect	No
MW-92	14	13	1.57	6	60.6%	No Trend	No
MW-98	14	4	1.32	0	47.8%	No Trend	No
MW-99	10	10	1.23	-23	97.7%	Decreasing	Yes
MW-100	5	5	0.45	-4	75.8%	Stable	No
MW-101	14	10	0.80	-54	99.9%	Decreasing	Yes
MW-102	15	7	1.09	-18	79.6%	No Trend	No
MW-113	14	14	0.69	-70	100.0%	Decreasing	Yes
MW-114	14	14	1.00	-45	99.3%	Decreasing	Yes
MW-115	14	14	0.66	-5	58.5%	Stable	No
MW-116	4	0	0.01	-1	50.0%	Non-Detect	No
MW-117	14	0	1.48	10	68.6%	Non-Detect	No
MW-118	4	0	0.02	1	50.0%	Non-Detect	No
MW-119	4	0	0.02	1	50.0%	Non-Detect	No
MW-123	14	14	0.47	-7	62.6%	Stable	No
MW-128	14	1	1.50	10	68.6%	No Trend	No
MW-129	15	7	0.95	-13	72.1%	Stable	No
MW-130	14	4	1.35	-9	66.6%	No Trend	No
MW-131	14	0	1.46	-12	72.3%	Non-Detect	No
MW-139	14	0	1.48	18	82.1%	Non-Detect	No
MW-140	14	1	1.44	4	56.4%	No Trend	No
MW-141	14	14	0.25	-62	100.0%	Decreasing	Yes
MW-142	8	1	1.39	2	54.8%	No Trend	No
MW-143	8	8	0.47	16	96.9%	Increasing	Yes

**TABLE 2**  
**MANN-KENDALL STATISTICAL TREND ANALYSIS RESULTS**  
**NOVEMBER 2004 TO NOVEMBER 2014**  
**ROHM AND HAAS CHEMICALS LLC**  
**MOSS POINT, MISSISSIPPI**

Well	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	Trend	Significant? <sup>a/</sup>
<b>GRAHAM FERRY AQUIFER</b>							
<i>1,2,3-Trichloropropane</i>							
MW-83	4	0	0.00	0	37.5%	Non-Detect	No
MW-120	4	0	0.00	0	37.5%	Non-Detect	No
MW-121	4	0	0.00	0	37.5%	Non-Detect	No
MW-122	4	0	0.00	0	37.5%	Non-Detect	No
<i>1,2-Dichloroethane (1,2-DCA)</i>							
MW-83	4	0	0.00	0	37.5%	Non-Detect	No
MW-120	4	0	0.00	0	37.5%	Non-Detect	No
MW-121	4	0	0.00	0	37.5%	Non-Detect	No
MW-122	4	0	0.00	0	37.5%	Non-Detect	No
<i>1,4-Dioxane</i>							
MW-83	4	0	0.03	1	50.0%	Non-Detect	No
MW-120	4	0	0.03	-1	50.0%	Non-Detect	No
MW-121	4	0	0.01	1	50.0%	Non-Detect	No
MW-122	4	0	0.05	-3	72.9%	Non-Detect	No
<i>Bis(2-chloroethoxy) methane (BCEM)</i>							
MW-83	4	0	0.03	1	50.0%	Non-Detect	No
MW-120	4	0	0.03	-1	50.0%	Non-Detect	No
MW-121	4	0	0.01	1	50.0%	Non-Detect	No
MW-122	4	0	0.05	-3	72.9%	Non-Detect	No
<i>Bis(2-chloroethyl) ether (BCEE)</i>							
MW-83	4	0	0.03	1	50.0%	Non-Detect	No
MW-120	4	0	0.03	-1	50.0%	Non-Detect	No
MW-121	4	0	0.01	1	50.0%	Non-Detect	No
MW-122	4	0	0.05	-3	72.9%	Non-Detect	No

<sup>a/</sup> Statistically significant at a 95% confidence level.

**TABLE 3  
SUMMARY COC TREND TABLE INDICATING CURRENT AND PROPOSED NEW MONITORING WELL SAMPLING SCHEDULES  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	1,2,3-TCP Trend	1,2-DCA Trend	1,4-Dioxane Trend	BCEM Trend	BCEE Trend	Overall Trend	Current Schedule	Proposed Schedule	Proposed Analyses			Comments
										VOCS	SVOCs	2-Chloro	
<b>Alluvial Aquifer</b>													
ARW-1	33.0	Decreasing	Decreasing	Stable	Decreasing	Decreasing	Decreasing	Semi-Annual	Annual	X	X	X	Recovery Well
ARW-2	32.0	Non-Detect	Decreasing	Stable	Probably Decreasing	Decreasing	Decreasing	Semi-Annual	Annual	X	X	X	Recovery Well
ARW-3	36.0	Probably Decreasing	Decreasing	Increasing	Stable	Decreasing	Decreasing	Semi-Annual	Annual	X	X	X	Recovery Well
ARW-4	32.0	Decreasing	Decreasing	No Trend	Decreasing	Decreasing	Decreasing	Semi-Annual	Annual	X	X	X	Recovery Well
ARW-5	37.0	No Trend	Increasing	Increasing	No Trend	Stable	Increasing/No Trend	Semi-Annual	Annual	X	X	X	Recovery Well
LAP-2	18.0	Non-Detect	Non-Detect	Stable	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Terminate				Nearby leak detection well MW-135 is sufficient for monitoring west of the hazardous waste landfill.
LAP-3	33.0	Non-Detect	Non-Detect	Non-Detect	No Trend	Non-Detect	Non-Detect	Semi-Annual	Terminate				Leak detection monitoring well MW-34 is sufficient for monitoring south of the hazardous waste landfill.
LAP-4	35.5	Non-Detect	No Trend	No Trend	Probably Increasing	No Trend	Mixed	Semi-Annual	Terminate				Leak detection monitoring well MW-34 is sufficient for monitoring south of the hazardous waste landfill.
MW-1	25.3	Decreasing	Decreasing	Stable	Decreasing	Stable	Decreasing/Stable	Semi-Annual	Annual	X	X		Deemed Unnecessary because it is adjacent to TAR-3. However, Optimization software recommended keeping.
MW-2	39.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary. MW-17 should be sufficient for monitoring north of the T-Lagoon.
MW-3	26.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Southeast corner of closed industrial landfill. Optimization software determined to be unnecessary.
MW-4	25.0	Non-Detect	Non-Detect	Non-Detect	Stable	Non-Detect	Non-Detect/Stable	Every 2-Years	Every 2-Years	X	X		Located south of the T-Lagoon.
MW-5	25.0	Non-Detect	No Trend	No Trend	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X			Located north of the V-Lagoon.
MW-6	25.0	Non-Detect	Stable	No Trend	Probably Increasing	Non-Detect	Mixed	Semi-Annual	Annual	X	X		Annual monitoring of this low concentration well east of the V-Lagoon should be sufficient.
MW-7R	38.0	Stable	Stable	No Trend	No Trend	No Trend	Stable/No Trend	Semi-Annual	Annual	X	X		Annual monitoring of this low concentration well north of the V-Lagoon should be sufficient.
MW-8	21.0	Decreasing	Decreasing	Decreasing	Decreasing	Non-Detect	Decreasing	Semi-Annual	Annual	X	X		Unnecessary Capture Zone Performance Well southeast of V-Lagoon. Annual monitoring is sufficient with its decreasing trend.
MW-9	25.0	Non-Detect	Non-Detect	Stable	No Trend	Non-Detect	Non-Detect/Stable	Semi-Annual	Terminate				South of V-Lagoon. Optimization software determined that this well was unnecessary.
MW-10	20.0	Non-Detect	Non-Detect	Non-Detect	No Trend	Non-Detect	Non-Detect	Every 2-Years	Terminate				South of V-Lagoon. Optimization software determined that this well was unnecessary.
MW-11	31.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X	X		Located southwest of the V-Lagoon.
MW-12	28.5	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary. MW-9 and MW-10 are nearby and sufficient for this area south of the V-Lagoon.
MW-14	31.0	Non-Detect	Non-Detect	Stable	Non-Detect	Non-Detect	Non-Detect/Stable	Every 2-Years	Terminate				Unnecessary. Nearby MW-58 should be sufficient for this area west of the V-Lagoon.
MW-15	41.5	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary. MW-19 should be sufficient at the northeast corner of the T-Lagoon.
MW-16	41.5	Non-Detect	Stable	No Trend	Non-Detect	Non-Detect	Non-Detect/Stable	Every 2-Years	Terminate				Unnecessary. Nearby MW-32 and MW-17 should be sufficient for this area east of landfill and north of T-Lagoon.
MW-17	39.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Located north of the T-Lagoon. Optimization software determined that this well was unnecessary.
MW-19	35.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Located at the northeast corner of the T-Lagoon. Optimization software determined that this well was unnecessary.
MW-22	36.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary. Does not monitor a plume. Well is midway between the industrial landfill and V-Lagoon where no plume exists.
MW-24	27.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X	X		Located northwest of the V-Lagoon.
MW-26	33.0	Non-Detect	No Trend	Increasing	Increasing	Non-Detect	Increasing/Non-Detect	Every 2-Years	Every 2-Years	X	X		Near VAR-1 and VAR-2. Retain in place of VAR-1 and VAR-2 when they are shut down.
MW-32	40.0	Non-Detect	No Trend	Stable	Non-Detect	Non-Detect	Non-Detect/Stable	Semi-Annual	Semi-Annual	X	X		Hazardous Waste Landfill Leak Detection
MW-33	37.0	Non-Detect	No Trend	Probably Decreasing	Non-Detect	Non-Detect	Non-Detect/Decreasing	Semi-Annual	Semi-Annual	X	X		Hazardous Waste Landfill Leak Detection
MW-34	40.0	Non-Detect	Non-Detect	Stable	No Trend	Non-Detect	Non-Detect	Semi-Annual	Semi-Annual	X	X		Hazardous Waste Landfill Leak Detection
MW-36	19.0	Non-Detect	Increasing	Probably Increasing	No Trend	No Trend	Increasing/No Trend	Semi-Annual	Annual	X	X	X	Formal area well with increasing trends.
MW-40	25.6	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary. Nearby MW-11 and MW-58 should be sufficient for this area southwest of the V-Lagoon.
MW-42	30.1	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary well far south of V-Lagoon. MW-10 is further east and in a better location to act as a western BCEM plume perimeter well.
MW-47	30.0	Non-Detect	Stable	No Trend	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary well at the NE corner of hazardous waste landfill. Leak detection well MW-134 is sufficient for monitoring north of the landfill.
MW-48	34.9	Non-Detect	Non-Detect	Non-Detect	Stable	Non-Detect	Non-Detect	Semi-Annual	Terminate				Unnecessary. No detections. NW hazardous waste landfill perimeter well. Leak detection well MW-134 is sufficient to monitor north of the landfill.
MW-49	37.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Does not monitor a plume. Unnecessary far northeast perimeter well.
MW-50	35.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Every 2-Years	X			Far monitoring well east of T-Lagoon plume. Terminate once remedial action is completed in the area.
MW-51	27.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Every 2-Years	X			Monitors east of MW-133, located southeast of T-Lagoon. Terminate once T-Lagoon remedial action complete.
MW-53	25.0	Non-Detect	No Trend	Non-Detect	Stable	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X			Northeastern BCEM plume perimeter well.
MW-54	32.0	Non-Detect	Stable	No Trend	No Trend	Non-Detect	Non-Detect/No Trend	Every 2-Years	Every 2-Years	X	X	X	Eastern BCEM plume perimeter well.
MW-55	26.0	Stable	No Trend	No Trend	Stable	No Trend	No Trend/Stable	Semi-Annual	Terminate				Unnecessary. Immediately adjacent to ARW-4.
MW-56	29.0	Non-Detect	No Trend	No Trend	No Trend	Non-Detect	No Trend/Non-Detect	Semi-Annual	Annual	X	X	X	Western BCEM plume edge well. Low levels only, reduce to annual monitoring.
MW-57	27.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X	X		Southwest BCEM plume perimeter well.
MW-58	27.0	Non-Detect	Non-Detect	Increasing	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Annual	X	X		Non-detect well. Reduce to annual status as a western V-Lagoon perimeter well.
MW-59	20.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Terminate unless MW-58 located further east has future sustained detections.
MW-74	21.1	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary. Terminate unless MW-106 located further west closer to BCEM plume has future sustained detections.
MW-75	27.5	Non-Detect	Non-Detect	No Trend	Decreasing	No Trend	Non-Detect/No Trend	Semi-Annual	Annual	X	X	X	Historically clean well along the river. Annual monitoring should be sufficient.
MW-76	19.7	Non-Detect	Decreasing	Stable	No Trend	No Trend	No Trend/Stable	Semi-Annual	Terminate				Unnecessary well. MW-134 is sufficient to monitor the north end of hazardous waste landfill.
MW-86	32.9	Decreasing	Decreasing	Decreasing	Decreasing	No Trend	Decreasing	Semi-Annual	Annual	X	X	X	Capture Zone Performance Well south of Formal area.
MW-87	18.0	Non-Detect	Non-Detect	Stable	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary well. MW-134 is sufficient to monitor the north end of hazardous waste landfill.
MW-88	20.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate				Unnecessary well. MW-134 is sufficient to monitor the north end of hazardous waste landfill.
MW-93	29.0	Non-Detect	Increasing	Probably Increasing	No Trend	No Trend	No Trend/Increasing	Semi-Annual	Annual	X	X	X	Capture Zone Sentinel Well located south of Formal area.
MW-94	27.0	Non-Detect	Decreasing	Stable	No Trend	Stable	Stable	Semi-Annual	Annual	X	X	X	Capture Zone Sentinel Well located south of Formal area at river.
MW-103	30.5	Stable	Decreasing	Stable	Decreasing	No Trend	Stable/Decreasing	Semi-Annual	Annual	X	X	X	Capture Zone Performance Well located southwest of the Formal area.
MW-104	25.0	Non-Detect	Non-Detect	Non-Detect	No Trend	Non-Detect	Non-Detect	Semi-Annual	Terminate				Unnecessary. MW-57, located further east toward BCEM plume is sufficient at SW plume boundary.
MW-105	31.5	Non-Detect	No Trend	Stable	Decreasing	No Trend	No Trend/Stable	Semi-Annual	Annual	X	X	X	Capture Zone Sentinel Well located southwest of Formal area at river.
MW-106	28.0	Non-Detect	Non-Detect	Stable	Stable	Non-Detect	Non-Detect/Stable	Semi-Annual	Annual	X	X		Mostly non-detect well at SE perimeter of BCEM plume. Annual monitoring is sufficient.
MW-107	21.0	Non-Detect	No Trend	No Trend	No Trend	No Trend	No Trend	Semi-Annual	Annual	X	X		Northeast BCEM plume perimeter. Mostly non-detect. Annual Monitoring is sufficient.
MW-108	30.0	Non-Detect	Non-Detect	Decreasing	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Annual	X			Non-detect well south of T-Lagoon and west of MW-133. Annual monitoring is sufficient.
MW-109	15.0	Non-Detect	Stable	Stable	Decreasing	No Trend	Stable	Semi-Annual	Terminate				North Woods well. Remediation complete of area is complete and only trace or non-detect concentrations exist.
MW-133	30.0	Non-Detect	Probably Decreasing	No Trend	Decreasing	No Trend	Decreasing/No Trend	Semi-Annual	Annual	X			SW of T-Lagoon. Relatively low concentrations. Annual monitoring should be sufficient.

**TABLE 3  
SUMMARY COC TREND TABLE INDICATING CURRENT AND PROPOSED NEW MONITORING WELL SAMPLING SCHEDULES  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	1,2,3-TCP Trend	1,2-DCA Trend	1,4-Dioxane Trend	BCEM Trend	BCEE Trend	Overall Trend	Current Schedule	Proposed Schedule	Proposed Analyses	Comments
<b>Alluvial Aquifer, Cont.</b>											
MW-134	16.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Semi-Annual	X X	Hazardous Waste Landfill Leak Detection
MW-135	42.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Semi-Annual	X X	Hazardous Waste Landfill Leak Detection
MW-136	26.9	Non-Detect	No Trend	Non-Detect	No Trend	Non-Detect	Non-Detect/No Trend	Semi-Annual	Terminate		Unnecessary well with mostly non-detect concentrations located east of BCEM plume. MW-53 and MW-54 further west are sufficient.
MW-137	24.0	Non-Detect	Non-Detect	No Trend	No Trend	Non-Detect	Non-Detect/No Trend	Semi-Annual	Terminate		Unnecessary well with mostly non-detect concentrations. MW-107 and MW-53 further west toward BCEM plume is sufficient.
TAP-1	30.5	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X	Terminate after remedial effort in T-Lagoon area.
TAP-2	30.5	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X	Terminate after remedial effort in T-Lagoon area.
TAP-3	28.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X X	Terminate after remedial effort in T-Lagoon area.
TAP-4	38.0	Non-Detect	Stable	Stable	Decreasing	Non-Detect	Stable/Decreasing	Semi-Annual	Annual	X X	Highest concentrations of the TAP series wells, but annual monitoring should be sufficient. Terminate after remedial effort.
TAP-5	33.5	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X X	Terminate after remedial effort.
TAR-1	28.0	Non-Detect	No Trend	Stable	No Trend	Non-Detect	Non-Detect/No Trend	Semi-Annual	Annual	X X	Recovery Well - Terminate after remedial effort
TAR-2	28.0	Probably Decreasing	Probably Decreasing	No Trend	Decreasing	No Trend	Decreasing/No Trend	Semi-Annual	Annual	X X	Recovery Well - Terminate after remedial effort
TAR-3	22.0	Decreasing	Decreasing	No Trend	No Trend	No Trend	No Trend/Decreasing	Semi-Annual	Annual	X X	Recovery Well - Terminate after remedial effort
TAR-4	23.0	No Trend	No Trend	Probably Increasing	Probably Increasing	No Trend	No Trend/Increasing	Semi-Annual	Annual	X X	Recovery Well - Terminate after remedial effort
VAP-1	36.0	Non-Detect	No Trend	No Trend	No Trend	No Trend	No Trend	Every 2-Years	Terminate		Unnecessary, MW-26, VAR-2 and VAR-3 are sufficient in this area east of the V-Lagoon.
VAP-2	33.0	Non-Detect	Stable	No Trend	No Trend	No Trend	No Trend/Stable	Every 2-Years	Terminate		Unnecessary, MW-26, TAP-3, VAR-2 and VAR-3 are sufficient in this area east of the V-Lagoon.
VAP-3	33.0	Non-Detect	Stable	No Trend	No Trend	No Trend	No Trend/Stable	Every 2-Years	Every 2-Years	X X	Retain for when the VAR series recover wells are shut down. Located southeast of V-Lagoon.
VAP-4	31.0	No Trend	No Trend	Decreasing	Stable	Stable	Stable/No Trend	Every 2-Years	Every 2-Years	X X	Determined to be unnecessary in favor of MW-8 in the area SW of V-Lagoon. Optimization software recommended retaining for SVOCs.
VAR-1	31.0	Non-Detect	Probably Decreasing	No Trend	Probably Increasing	Non-Detect	Mixed	Semi-Annual	Terminate		Well is in bad condition. Recovery Well which serves no purpose and is not necessary. Terminate pumping and monitoring.
VAR-2	33.0	Non-Detect	Decreasing	Probably Decreasing	No Trend	Non-Detect	Non-Detect/Decreasing	Semi-Annual	Terminate		Recovery Well which serves no purpose and is not necessary. Terminate pumping and monitoring.
VAR-3	33.0	Probably Decreasing	Decreasing	Stable	No Trend	No Trend	Decreasing/No Trend	Semi-Annual	Terminate		Recovery Well which serves no purpose and is not necessary. Terminate pumping and monitoring.

**TABLE 3  
SUMMARY COC TREND TABLE INDICATING CURRENT AND PROPOSED NEW MONITORING WELL SAMPLING SCHEDULES  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	1,2,3-TCP Trend	1,2-DCA Trend	1,4-Dioxane Trend	BCEM Trend	BCEE Trend	Overall Trend	Current Schedule	Proposed Schedule	Proposed Analyses	Comments
<b>Upper Citronelle Aquifer</b>											
MW-18	76.0	Non-Detect	No Trend	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate		Single well north of T-Lagoon. Optimization software determined this well to be unnecessary.
MW-20	65.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X	One of two wells east of T-Lagoon.
MW-23	68.0	Non-Detect	No Trend	No Trend	No Trend	Stable	No Trend/Stable	Semi-Annual	Annual	X X	Stable well north of the V-Lagoon within the BCEM plume. Annual sampling should be sufficient.
MW-27R	70.0	Non-Detect	No Trend	Stable	Decreasing	Decreasing	Decreasing/Stable	Semi-Annual	Annual	X X	Decreasing well within the V-Lagoon BCEM plume. Annual sampling should be sufficient.
MW-28	77.0	Non-Detect	Non-Detect	Non-Detect	No Trend	No Trend	Non-Detect/No Trend	Semi-Annual	Every 2-Years	X	Redundant well adjacent and just North of UCRW-1. However, optimization software recommended sampling for VOCs.
MW-29	70.0	Non-Detect	No Trend	No Trend	No Trend	No Trend	No Trend	Every 2-Years	Every 2-Years	X X	Retain as BCEM plume well northeast of V-Lagoon.
MW-30	70.0	No Trend	Decreasing	No Trend	Stable	Decreasing	Decreasing/No Trend	Every 2-Years	Every 2-Years	X X	Retain as BCEM plume well east of V-Lagoon.
MW-31	68.0	No Trend	No Trend	Increasing	Increasing	Increasing	Increasing/No Trend	Semi-Annual	Annual	X X X	BCEM plume well northwest of the Formal area.
MW-35	70.0	Non-Detect	Stable	No Trend	Increasing	Increasing	Stable/Increasing	Semi-Annual	Annual	X X	BCEM Plume well east of the V-Lagoon and north of the Formal area.
MW-37	75.0	Non-Detect	No Trend	Stable	Stable	Stable	Stable	Every 2-Years	Every 2-Years	X X	Northeast Formal area BCEM plume well.
MW-38	74.0	Non-Detect	Stable	Non-Detect	Stable	Non-Detect	Non-Detect/Stable	Every 2-Years	Every 2-Years	X X	Southeast of UCRW-2. BCEM plume perimeter well.
MW-41	80.7	Non-Detect	Decreasing	No Trend	No Trend	Non-Detect	Non-Detect/No Trend	Every 2-Years	Terminate		Redundant well. VUCP-1 a short distance to the northeast is sufficient for the SW perimeter of the V-Lagoon area.
MW-60	65.0	Non-Detect	Non-Detect	Non-Detect	Stable	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X X	Single well west of T-Lagoon.
MW-61	54.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate		Unnecessary well in the far northeast of the site that does not monitor any plume.
MW-62	65.0	Decreasing	Decreasing	No Trend	Decreasing	Decreasing	Decreasing	Semi-Annual	Annual	X X	Capture Zone Performance Well on the eastern edge of BCEM plume.
MW-63	80.0	Probably Decreasing	Decreasing	No Trend	No Trend	No Trend	No Trend/Decreasing	Semi-Annual	Annual	X X	Mostly non-detect well just east of UCRW-5 and a southeast perimeter BCEM plume well. Annual monitoring is sufficient.
MW-64	67.0	Non-Detect	Stable	No Trend	No Trend	No Trend	No Trend/Stable	Semi-Annual	Every 2-Years	X X X	Interior BCEM plume well located just west of UCRW-4. Sampling every 2 years is sufficient.
MW-65	70.0	Non-Detect	Non-Detect	Non-Detect	No Trend	Non-Detect	Non-Detect	Semi-Annual	Terminate		Non-detect Capture Zone Sentinel Well located at the river. Optimization software determined that this well was unnecessary.
MW-66	74.2	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate		Far southwest perimeter BCEM plume well. No need to sample this well unless concentrations in UCRW-1 increase.
MW-67	69.0	Non-Detect	Decreasing	Stable	Decreasing	Probably Increasing	Stable/Decreasing	Semi-Annual	Annual	X X	Less important Capture Zone Performance Well. Western BCEM plume area. Annual is sufficient due to stable/decreasing trend.
MW-68	70.0	Non-Detect	Non-Detect	Non-Detect	Stable	No Trend	Non-Detect/Stable	Semi-Annual	Annual	X X	Northwest edge BCEM plume well. Annual monitoring is sufficient.
MW-69	70.0	Non-Detect	Decreasing	No Trend	No Trend	Decreasing	Decreasing/No Trend	Semi-Annual	Annual	X X	Capture Zone Sentinel Well located at the north edge of BCEM plume.
MW-70	69.5	Non-Detect	Stable	Probably Decreasing	Stable	No Trend	Stable	Semi-Annual	Every 2-Years	X X	Stable well southeast of T-Lagoon. Sampling every two years like the other T-Lagoon wells is sufficient.
MW-77	79.1	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate		MW-63 is closer to the edge of the BCEM plume and is sufficient for this area. MW-90, even further SE is also not needed.
MW-78	83.1	Non-Detect	No Trend	Non-Detect	Decreasing	No Trend	Non-Detect/No Trend	Semi-Annual	Annual	X X X	Capture Zone Sentinel Well located at the river with non-detect or very low concentrations. Annual monitoring is sufficient.
MW-79	69.1	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Terminate		Less important Capture Zone Sentinel Well. Not necessary and too far west to monitor a plume. Optimization software recommended termination.
MW-80	75.9	Non-Detect	Non-Detect	Non-Detect	Stable	Non-Detect	Non-Detect	Every 2-Years	Terminate		Well is located too far west to monitor plume. MW-67 is a performance well located further east and is sufficient.
MW-81	80.1	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X	Well is located too far north and west to monitor plume. However, Optimization software recommended sampling for VOCs.
MW-89	64.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Every 2-Years	X X	East BCEM plume perimeter well.
MW-90	66.0	Non-Detect	Non-Detect	Non-Detect	No Trend	Non-Detect	Non-Detect	Every 2-Years	Terminate		MW-77 is closer to the edge of the BCEM plume and is sufficient for this area. MW-90, even further southeast is also not needed.
MW-95	66.0	Non-Detect	No Trend	Stable	Decreasing	Non-Detect	Non-Detect/Stable	Semi-Annual	Annual	X X	Northeast BCEM plume edge well. Annual monitoring is sufficient.
MW-96	64.0	Non-Detect	Decreasing	No Trend	Probably Decreasing	Stable	Stable/Decreasing	Semi-Annual	Annual	X X X	Capture Zone Performance Well located south of the Formal area at Omega Protein.
MW-97	62.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	No Trend	Non-Detect	Semi-Annual	Annual	X X	Non-detect Capture Zone Sentinel Well located south of the Formal area at the river. Annual monitoring should be sufficient.
MW-110	62.0	Non-Detect	Non-Detect	Stable	Probably Decreasing	Non-Detect	Non-Detect/Stable	Semi-Annual	Annual	X	Easternmost BCEM plume perimeter well. Maintain, but annual monitoring is sufficient.
MW-111	66.3	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Semi-Annual	Every 2-Years	X	Non-detect T-Lagoon area plume perimeter well. Monitoring every two years like other T-Lagoon area UC wells is sufficient.
MW-112	72.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Every 2-Years	Terminate		Well is located too far north to monitor plume. MW-69 is a sentinel well located further south and is sufficient for this area.
MW-124	68.0	--	--	--	--	--	--	Every 2-Years	Terminate		No Access. Well is located across the river and we have no access to it.
MW-125	66.0	Non-Detect	No Trend	Stable	No Trend	No Trend	No Trend/Stable	Semi-Annual	Annual	X	Mostly non-detect T-Lagoon plume perimeter well southeast of T-Lagoon with occasional trace levels. Annual monitoring is sufficient.
MW-126	69.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non Detect	Semi-Annual	Terminate		MW-126 is much too far west to be of use (at Highway 63). MW-68, located well to the east, is sufficient to monitor this area.
MW-132	78.0	Non-Detect	Non-Detect	Non-Detect	Probably Increasing	No Trend	Non Detect/Increasing	Semi-Annual	Terminate		North Woods remediation is complete and this well has been non-detect for 3 consecutive sampling events.
MW-138	62.5	No Trend	Stable	Probably Increasing	Stable	Stable	Stable	Semi-Annual	Annual	X X	Capture Zone Performance Well located north of V-Lagoon.
MW-144		Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	--	Semi-Annual	Annual	X X X	New Formal area well with highest Upper Citronelle concentrations. Retain at semi-annual status.
UCRW-1	70.0	Non-Detect	No Trend	Probably Decreasing	Decreasing	No Trend	Decreasing/No Trend	Semi-Annual	Annual	X X X	Recovery Well. No longer pumping but now used as a southwest perimeter BCEM plume monitoring well. Annual monitoring is sufficient.
UCRW-2	70.0	Stable	Decreasing	Probably Decreasing	Increasing	No Trend	Decreasing/Mixed	Semi-Annual	Annual	X X X	Recovery Well
UCRW-3	70.0	No Trend	No Trend	Decreasing	Increasing	Decreasing	No Trend/Decreasing	Semi-Annual	Annual	X X X	Recovery Well
UCRW-4	61.0	Decreasing	Decreasing	Decreasing	No Trend	Decreasing	Decreasing	Semi-Annual	Annual	X X X	Recovery Well
UCRW-5	61.0	Probably Decreasing	Decreasing	No Trend	No Trend	Probably Decreasing	Decreasing/No Trend	Semi-Annual	Annual	X X X	Recovery Well
VUCP-1	75.0	Non-Detect	Stable	Stable	Decreasing	Decreasing	Stable/Decreasing	Every 2-Years	Every 2-Years	X X	Retain in place of MW-41.
VUCR-1R	71.0	Non-Detect	No Trend	Increasing	No Trend	No Trend	No Trend/Mixed	Semi-Annual	Annual	X X X	Recovery Well - Terminate pumping due to potential migration of COCs. Reduce sampling to annual when pumping is terminated.

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ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	1,2,3-TCP Trend	1,2-DCA Trend	1,4-Dioxane Trend	BCEM Trend	BCEE Trend	Overall Trend	Current Schedule	Proposed Schedule	Proposed Analyses	Comments
<b>Lower Citronelle Aquifer</b>											
LCRW-1	105.0	Non-Detect	Stable	Non-Detect	No Trend	No Trend	<b>Non-Detect/No Trend</b>	Semi-Annual	Annual	X X	Recovery Well
LCRW-2	117.0	Non-Detect	No Trend	Non-Detect	Stable	Decreasing	<b>Stable</b>	Semi-Annual	Annual	X X	Recovery Well
LCRW-3	109.0	Non-Detect	Decreasing	<b>Probably Increasing</b>	Decreasing	Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	Recovery Well
LCRW-4	102.0	Non-Detect	<b>Increasing</b>	No Trend	Stable	<b>Increasing</b>	<b>Increasing/Stable</b>	Semi-Annual	Annual	X X	Recovery Well
LCRW-5	106.0	Non-Detect	<b>Increasing</b>	Stable	<b>Increasing</b>	Non-Detect	<b>Increasing/Stable</b>	Semi-Annual	Annual	X X X	Recovery Well
LCRW-6	112.0	Decreasing	Decreasing	Decreasing	Decreasing	Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X X	Recovery Well
LCRW-7	107.0	Non-Detect	No Trend	No Trend	Stable	Stable	<b>Stable/No Trend</b>	Semi-Annual	Annual	X X	Recovery Well
LCRW-8	108.0	Decreasing	Probably Decreasing	Stable	Decreasing	Probably Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	Recovery Well
LCRW-9	112.0	Decreasing	Decreasing	Decreasing	Decreasing	Probably Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	Recovery Well
MW-21	93.5	Non-Detect	Stable	Stable	Non-Detect	Non-Detect	<b>Non-Detect/Stable</b>	Every 2-Years	Terminate		Unnecessary well southeast of industrial landfill. Trace level concentrations only. MW-116 further south more closely monitors the BCEM plume.
MW-25R	111.0	Non-Detect	Stable	Stable	Stable	Stable	<b>Stable</b>	Every 2-Years	Every 2-Years	X X	Stable trend well in V-Lagoon portion of plume. Monitoring every two years is sufficient.
MW-44	110.6	Non-Detect	No Trend	Non-Detect	No Trend	Non-Detect	<b>Non Detect/No Trend</b>	Every 2-Years	Terminate		Southwest corner of Formal area just beyond plume. Optimization software recommended terminating.
MW-45	105.1	Non-Detect	<b>Probably Increasing</b>	Stable	No Trend	Non-Detect	<b>Stable/Mixed</b>	Semi-Annual	Terminate		Southwest plume perimeter well. Optimization software recommended termination.
MW-46	100.7	Non-Detect	Decreasing	Stable	Decreasing	Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	Capture Zone Performance Well adjacent to LCRW-3.
MW-72	90.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non-Detect</b>	Every 2-Years	Terminate		Unnecessary. Well is way too far north and east to monitor a plume.
MW-73	109.0	Non-Detect	Non-Detect	Non-Detect	Stable	Non-Detect	<b>Non-Detect</b>	Every 2-Years	Every 2-Years	X X	Southwest BCEM plume perimeter well.
MW-82R	114.3	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non-Detect</b>	Every 2-Years	Terminate		Well is located too far south to monitor plume and is non-detect. MW-102 is further north and sufficient.
MW-84	105.0	Non-Detect	Probably Decreasing	Stable	Decreasing	No Trend	<b>Decreasing/Non Detect</b>	Semi-Annual	Annual	X X	Decreasing/non-detect trace level only Capture Zone Sentinel Well west of V-Lagoon. Annual monitoring is sufficient.
MW-85	116.1	Non-Detect	Stable	No Trend	No Trend	No Trend	<b>No Trend/Stable</b>	Every 2-Years	Every 2-Years	X X	Northeast corner of Formal area well.
MW-91	105.0	Non-Detect	Non-Detect	No Trend	No Trend	Non-Detect	<b>Non Detect/No Trend</b>	Semi-Annual	Terminate		Unnecessary Capture Zone Sentinel Well far west of V-Lagoon. Terminate in favor of MW-84 as the only sentinel well here.
MW-92	116.0	No Trend	No Trend	<b>Probably Increasing</b>	No Trend	No Trend	<b>No Trend/Increasing</b>	Semi-Annual	Terminate		Unnecessary. Immediately adjacent to LCRW-8
MW-98	110.5	Non-Detect	Non-Detect	No Trend	Stable	No Trend	<b>Non Detect/No Trend</b>	Semi-Annual	Annual	X X X	Stable trace level only Capture Zone Sentinel Well at river. Annual monitoring is sufficient.
MW-99	107.7	Decreasing	Probably Decreasing	Stable	Probably Decreasing	Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	Capture Zone Performance Well at river.
MW-100	109.0	Non-Detect	Stable	No Trend	Stable	Stable	<b>Stable</b>	Every 2-Years	Every 2-Years	X X	Interior plume well west of LCRW-9.
MW-101	107.0	Non-Detect	Decreasing	<b>Probably Increasing</b>	Decreasing	Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	Capture Zone Performance Well located northwest of the V-Lagoon in the edge of the BCEM plume.
MW-102	107.0	Non-Detect	Stable	Stable	No Trend	No Trend	<b>Stable/No Trend</b>	Semi-Annual	Annual	X X X	South edge of BCEM plume well. Annual monitoring is sufficient.
MW-113	110.0	No Trend	Decreasing	Stable	Decreasing	Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	Capture Zone Performance Well at southeast BCEM plume edge.
MW-114	110.5	Non-Detect	Decreasing	Decreasing	Decreasing	Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	BCEM plume edge well just North of LCRW-9. Annual monitoring is sufficient.
MW-115	111.5	Non-Detect	<b>Probably Increasing</b>	Stable	Stable	Stable	<b>Stable</b>	Semi-Annual	Terminate		Capture Zone Performance Well adjacent to LCRW-7. However, optimization software recommended termination.
MW-116	105.0	Non-Detect	No Trend	Stable	Stable	Non-Detect	<b>Non Detect/Stable</b>	Every 2-Years	Every 2-Years	X X	Northwestern BCEM plume perimeter well.
MW-117	106.0	Non-Detect	Non-Detect	Non-Detect	No Trend	Non-Detect	<b>Non Detect</b>	Semi-Annual	Terminate		Unnecessary far western BCEM plume perimeter well. MW-118 in this area is sufficient.
MW-118	114.5	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non Detect</b>	Every 2-Years	Every 2-Years	X	Far northwestern BCEM plume perimeter well.
MW-119	104.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non Detect</b>	Every 2-Years	Terminate		Well is located too far north to monitor the BCEM plume. Terminate in favor of MW-140, which is further south and closer.
MW-123 / LCRW-10	110.0	Non-Detect	Stable	No Trend	No Trend	Stable	<b>Stable/No Trend</b>	Semi-Annual	Annual	X X	Capture Zone Performance Well recently converted to a recovery well.
MW-127	116.5	- -	- -	- -	- -	- -	- -	Every 2-Years	Terminate		Located across the river and we have no-access to it.
MW-128	111.0	Non-Detect	Stable	Non-Detect	Non-Detect	No Trend	<b>Non Detect</b>	Semi-Annual	Every 2-Years	X X	Non-detect southeast BCEM plume perimeter well. Monitoring every other year is sufficient.
MW-129	107.0	Non-Detect	Stable	No Trend	No Trend	Stable	<b>Stable/No Trend</b>	Semi-Annual	Annual	X X	Non-detect or trace level only Capture Zone Sentinel Well at southeast BCEM plume perimeter. Annual monitoring is sufficient.
MW-130	109.0	Non-Detect	Non-Detect	Stable	Stable	No Trend	<b>Non Detect/Stable</b>	Semi-Annual	Every 2-Years	X X	Non-detect/stable north central BCEM plume perimeter well. Monitoring every other year is sufficient.
MW-131	106.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non Detect</b>	Semi-Annual	Terminate		Well is located too far north to monitor the BCEM plume. Terminate in favor of MW-116 and MW-130, which are further south.
MW-139	126.0	Non-Detect	Non-Detect	No Trend	No Trend	Non-Detect	<b>Non Detect/No Trend</b>	Semi-Annual	Terminate		Well is too far west and south to monitor plume. MW-73 and MW-43 are closer in and more than sufficient.
MW-140	104.0	Non-Detect	Stable	Stable	Decreasing	No Trend	<b>Stable</b>	Semi-Annual	Annual	X X	Stable Capture Zone Sentinel Well located northwest of V-Lagoon. Annual monitoring is sufficient.
MW-141	102.0	Non-Detect	Decreasing	Stable	Probably Decreasing	Decreasing	<b>Decreasing</b>	Semi-Annual	Annual	X X	Capture Zone Performance Well located in northeast BCEM plume area.
MW-142	109.0	Non-Detect	Non-Detect	<b>Increasing</b>	Stable	No Trend	<b>Non Detect/Mixed</b>	Semi-Annual	Annual	X X	Mostly non-detect Capture Zone Sentinel Well in northeast BCEM plume perimeter. Annual monitoring is sufficient.
MW-143	110.0	Stable	Stable	Stable	<b>Increasing</b>	<b>Increasing</b>	<b>Stable/Increasing</b>	Semi-Annual	Annual	X X	Capture Zone Performance Well at northeast BCEM plume edge.
<b>Graham Ferry Aquifer</b>											
MW-83	144.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non Detect</b>	Every 2-Years	Every 2-Years	X X	Retain
MW-120	176.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non Detect</b>	Every 2-Years	Every 2-Years	X X	Retain
MW-121	176.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non Detect</b>	Every 2-Years	Every 2-Years	X X	Retain
MW-122	176.0	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	<b>Non Detect</b>	Every 2-Years	Every 2-Years	X X	Retain

- Notes:
- Red shading indicates hazardous waste landfill leak detection monitoring wells on a permitted semi-annual status.
  - Brown shading indicates recovery wells.
  - Orange shading indicates proposed annual monitoring status.
  - Green shading indicates proposed every 2-year monitoring status.
  - Purple shading indicates wells proposed to be terminated from the monitoring program.
  - Yellow shading indicates increasing or potentially increasing trends.

**TABLE 4  
SUMMARY OF EVALUATION CRITERIA SCREENING INDICATING CURRENT AND PROPOSED NEW MONITORING WELL SAMPLING SCHEDULES  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	Overall Trend	Current Schedule	Retention Criteria Met			Reduction Criteria Met					Proposed Analyses			Comments			
				Active Recovery Well	Critically Located Capture Zone Performance or Sentinel Well	Hazardous Waste Landfill Leak Detection Well	Lower Concentration Well	Stable, Decreasing or Non-Detect Statistical Trend	Non-Important Non-Strategic Location	Other Nearby Wells in a Similar or Better Location	Three or More Reduction Criteria Met	Proposed Schedule	VOCs	SVOCs		2-Chloro		
<b>Alluvial Aquifer</b>																		
ARW-1	33.0	Decreasing	Semi-Annual	X				X						Annual	X	X	X	Recovery Well
ARW-2	32.0	Decreasing	Semi-Annual	X				X						Annual	X	X	X	Recovery Well
ARW-3	36.0	Decreasing	Semi-Annual	X				X						Annual	X	X	X	Recovery Well
ARW-4	32.0	Decreasing	Semi-Annual	X				X						Annual	X	X	X	Recovery Well
ARW-5	37.0	Increasing/No Trend	Semi-Annual	X				X						Annual	X	X	X	Recovery Well
LAP-2	18.0	Non-Detect	Semi-Annual				X	X			X			Terminate				Nearby leak detection well MW-135 is sufficient for monitoring west of the hazardous waste landfill.
LAP-3	33.0	Non-Detect	Semi-Annual				X	X		X	X			Terminate				Leak detection monitoring well MW-34 is sufficient for monitoring south of the hazardous waste landfill.
LAP-4	35.5	Mixed	Semi-Annual				X	X		X	X			Terminate				Leak detection monitoring well MW-34 is sufficient for monitoring south of the hazardous waste landfill.
MW-1	25.3	Decreasing/Stable	Semi-Annual				X	X		X	X			Annual	X	X		Adjacent to TAR-3. However, optimization software recommended retaining.
MW-2	39.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary. MW-17 should be sufficient for monitoring north of the T-Lagoon.
MW-3	26.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Southeast corner of closed industrial landfill. Optimization software determined to be unnecessary.
MW-4	25.0	Non-Detect/Stable	Every 2-Years				X	X						Every 2-Years	X	X		
MW-5	25.0	Non-Detect	Every 2-Years				X	X						Every 2-Years	X			
MW-6	25.0	Mixed	Semi-Annual				X	X			X			Annual	X	X		
MW-7R	38.0	Stable/No Trend	Semi-Annual				X	X						Annual	X	X		
MW-8	21.0	Decreasing	Semi-Annual				X	X		X	X			Annual	X	X		Unnecessary Capture Zone Performance Well southeast of V-Lagoon. Annual monitoring is sufficient with its decreasing trend.
MW-9	25.0	Non-Detect/Stable	Semi-Annual				X	X						Terminate				Optimization software determined that this well was unnecessary.
MW-10	20.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Optimization software determined that this well was unnecessary.
MW-11	31.0	Non-Detect	Every 2-Years				X	X		X	X			Every 2-Years	X	X		
MW-12	28.5	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary. MW-9 and MW-10 are nearby and sufficient for this area south of the V-Lagoon.
MW-14	31.0	Non-Detect/Stable	Every 2-Years				X	X		X	X			Terminate				Unnecessary. Nearby MW-58 should be sufficient for this area west of the V-Lagoon.
MW-15	41.5	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary. MW-19 should be sufficient at the northeast corner of the T-Lagoon.
MW-16	41.5	Non-Detect/Stable	Every 2-Years				X	X		X	X			Terminate				Unnecessary. Nearby MW-32 and MW-17 should be sufficient for this area east of landfill and north of T-Lagoon.
MW-17	39.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Located north of the T-Lagoon. Optimization software determined that this well was unnecessary.
MW-19	35.0	Non-Detect	Every 2-Years				X	X						Terminate				Located at the northeast corner of the T-Lagoon. Optimization software determined that this well was unnecessary.
MW-22	36.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary. Does not monitor a plume. Well is midway between the industrial landfill and V-Lagoon where no plume exists.
MW-24	27.0	Non-Detect	Every 2-Years				X	X		X	X			Every 2-Years	X	X		
MW-26	33.0	Increasing/Non-Detect	Every 2-Years				X	X		X	X			Every 2-Years	X	X		Near VAR-1 and VAR-2. Retain in place of VAR-1 and VAR-2 when they are shut down.
MW-32	40.0	Non-Detect/Stable	Semi-Annual			X	X	X						Semi-Annual	X	X		Hazardous Waste Landfill Leak Detection
MW-33	37.0	Non-Detect/Decreasing	Semi-Annual			X	X	X						Semi-Annual	X	X		Hazardous Waste Landfill Leak Detection
MW-34	40.0	Non-Detect	Semi-Annual			X	X	X						Semi-Annual	X	X		Hazardous Waste Landfill Leak Detection
MW-36	19.0	Increasing/No Trend	Semi-Annual				X	X						Annual	X	X	X	Formal area well with increasing trends.
MW-40	25.6	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary. Nearby MW-11 and MW-17 should be sufficient for this area southwest of the V-Lagoon.
MW-42	30.1	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary well far south of the V-Lagoon. MW-10 further east is better located to act as a western BCEM plume perimeter well.
MW-47	30.0	Non-Detect	Every 2-Years				X	X						Terminate				Unnecessary well at the NE corner of hazardous waste landfill. Leak detection well MW-134 is sufficient for monitoring north of the landfill.
MW-48	34.9	Non-Detect	Semi-Annual				X	X		X	X			Terminate				Unnecessary. No detections. NW hazardous waste landfill perimeter well. Leak detection well MW-134 is sufficient to monitor north of the land
MW-49	37.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Does not monitor a plume. Unnecessary far northeast perimeter well.
MW-50	35.0	Non-Detect	Semi-Annual				X	X		X	X			Every 2-Years	X			Far monitoring well east of T-Lagoon plume. Terminate once remedial action is completed in the area.
MW-51	27.0	Non-Detect	Semi-Annual				X	X		X	X			Every 2-Years	X			Monitors east of MW-133, located southeast of T-Lagoon. Terminate once T-Lagoon remedial action complete.
MW-53	25.0	Non-Detect	Every 2-Years				X	X		X	X			Every 2-Years	X			
MW-54	32.0	Non-Detect/No Trend	Every 2-Years				X	X						Every 2-Years	X	X	X	
MW-55	26.0	No Trend/Stable	Semi-Annual				X	X		X	X			Terminate				Unnecessary. Immediately adjacent to ARW-4.
MW-56	29.0	No Trend/Non-Detect	Semi-Annual				X	X		X	X			Annual	X	X	X	
MW-57	27.0	Non-Detect	Every 2-Years				X	X		X	X			Every 2-Years	X	X		
MW-58	27.0	Non-Detect	Semi-Annual				X	X						Annual	X	X		
MW-59	20.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Terminate unless MW-58 located further east has future sustained detections.
MW-74	21.1	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary. Terminate unless MW-106 located further west closer to BCEM plume has future sustained detections.
MW-75	27.5	Non-Detect/No Trend	Semi-Annual				X	X						Annual	X	X	X	
MW-76	19.7	No Trend/Stable	Semi-Annual				X	X		X	X			Terminate				Unnecessary well. MW-134 is sufficient to monitor the north end of hazardous waste landfill.
MW-86	32.9	Decreasing	Semi-Annual		X			X						Annual	X	X	X	Capture Zone Performance Well south of Formal area.
MW-87	18.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary well. MW-134 is sufficient to monitor the north end of hazardous waste landfill.
MW-88	20.0	Non-Detect	Every 2-Years				X	X		X	X			Terminate				Unnecessary well. MW-134 is sufficient to monitor the north end of hazardous waste landfill.
MW-93	29.0	No Trend/Increasing	Semi-Annual		X		X	X						Annual	X	X	X	Capture Zone Sentinel Well located south of Formal area.
MW-94	27.0	Stable	Semi-Annual		X		X	X						Annual	X	X	X	Capture Zone Sentinel Well located south of Formal area at river.
MW-103	30.5	Stable/Decreasing	Semi-Annual		X		X	X						Annual	X	X	X	Capture Zone Performance Well located southwest of the Formal area.
MW-104	25.0	Non-Detect	Semi-Annual				X	X		X	X			Terminate				Unnecessary. MW-57, located further east toward BCEM plume is sufficient at SW plume boundary.
MW-105	31.5	No Trend/Stable	Semi-Annual		X		X	X						Annual	X	X	X	Capture Zone Sentinel Well located southwest of Formal area at river.
MW-106	28.0	Non-Detect/Stable	Semi-Annual				X	X						Annual	X	X		
MW-107	21.0	No Trend	Semi-Annual				X	X						Annual	X	X		
MW-108	30.0	Non-Detect	Semi-Annual				X	X		X	X			Annual	X			
MW-109	15.0	Stable	Semi-Annual				X	X		X	X			Terminate				North Woods well. Remediation of area is complete and only trace or non-detect concentrations exist.
MW-133	30.0	Decreasing/No Trend	Semi-Annual				X	X						Annual	X			

**TABLE 4  
SUMMARY OF EVALUATION CRITERIA SCREENING INDICATING CURRENT AND PROPOSED NEW MONITORING WELL SAMPLING SCHEDULES  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	Overall Trend	Current Schedule	Active Recovery Well	Critically Located Capture Zone Performance or Sentinel Well	Hazardous Waste Landfill Leak Detection Well	Lower Concentration Well	Stable, Decreasing or Non-Detect Statistical Trend	Non-Important Non-Strategic Location	Other Nearby Wells in a Similar or Better Location	Three or More Reduction Criteria Met	Proposed Schedule	VOCS	SVOCs	2-Chloro	Comments
<b>Alluvial Aquifer, Cont.</b>																
MW-134	16.0	Non-Detect	Semi-Annual			X	X	X				Semi-Annual	X	X		Hazardous Waste Landfill Leak Detection
MW-135	42.0	Non-Detect	Semi-Annual			X	X	X				Semi-Annual	X	X		Hazardous Waste Landfill Leak Detection
MW-136	26.9	Non-Detect/No Trend	Semi-Annual				X	X	X	X	X	Terminate				Unnecessary well with mostly non-detect concentrations located east of BCEM plume. MW-53 and MW-54 further west are sufficient.
MW-137	24.0	Non-Detect/No Trend	Semi-Annual				X	X	X	X	X	Terminate				Unnecessary well with mostly non-detect concentrations. MW-107 and MW-53 further west toward BCEM plume is sufficient.
TAP-1	30.5	Non-Detect	Every 2-Years				X	X				Every 2-Years	X			Terminate after remedial effort in T-Lagoon area.
TAP-2	30.5	Non-Detect	Every 2-Years				X	X				Every 2-Years	X			Terminate after remedial effort in T-Lagoon area.
TAP-3	28.0	Non-Detect	Every 2-Years				X	X				Every 2-Years	X	X		Terminate after remedial effort in T-Lagoon area.
TAP-4	38.0	Stable/Decreasing	Semi-Annual					X				Annual	X	X		Highest concentrations of the TAP series wells, but annual monitoring should be sufficient. Terminate after remedial effort.
TAP-5	33.5	Non-Detect	Every 2-Years				X	X				Every 2-Years	X	X		Terminate after remedial effort.
TAR-1	28.0	Non-Detect/No Trend	Semi-Annual	X			X	X				Annual	X	X		Recovery Well - Terminate after remedial effort
TAR-2	28.0	Decreasing/No Trend	Semi-Annual	X			X	X				Annual	X	X		Recovery Well - Terminate after remedial effort
TAR-3	22.0	No Trend/Decreasing	Semi-Annual	X								Annual	X	X		Recovery Well - Terminate after remedial effort
TAR-4	23.0	No Trend/Increasing	Semi-Annual	X								Annual	X	X		Recovery Well - Terminate after remedial effort
VAP-1	36.0	No Trend	Every 2-Years				X		X	X	X	Terminate				Unnecessary, MW-26, VAR-2 and VAR-3 are sufficient in this area east of the V-Lagoon.
VAP-2	33.0	No Trend/Stable	Every 2-Years				X		X	X	X	Terminate				Unnecessary, MW-26, TAP-3, VAR-2 and VAR-3 are sufficient in this area east of the V-Lagoon.
VAP-3	33.0	No Trend/Stable	Every 2-Years				X			X		Every 2-Years	X	X		Retain for when the VAR series recover wells are shut down. Located southeast of V-Lagoon.
VAP-4	31.0	Stable/No Trend	Every 2-Years				X	X	X	X	X	Every 2-Years		X	X	Determined to be unnecessary in favor of MW-8 in the area SW of V-Lagoon. Optimization software recommended retaining SVOCs.
VAR-1	31.0	Mixed	Semi-Annual	X			X		X	X	X	Terminate				Well is in bad condition. Recovery Well which serves no purpose and is not necessary. Terminate pumping and monitoring.
VAR-2	33.0	Non-Detect/Decreasing	Semi-Annual	X			X	X	X	X	X	Terminate				Recovery Well which serves no purpose and is not necessary. Terminate pumping and monitoring.
VAR-3	33.0	Decreasing/No Trend	Semi-Annual	X			X	X	X	X	X	Terminate				Recovery Well which serves no purpose and is not necessary. Terminate pumping and monitoring.

**TABLE 4  
SUMMARY OF EVALUATION CRITERIA SCREENING INDICATING CURRENT AND PROPOSED NEW MONITORING WELL SAMPLING SCHEDULES  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	Overall Trend	Current Schedule	Active Recovery Well	Critically Located Capture Zone Performance or Sentinel Well	Hazardous Waste Landfill Leak Detection Well	Lower Concentration Well	Stable, Decreasing or Non-Detect Statistical Trend	Non-Important Non-Strategic Location	Other Nearby Wells in a Similar or Better Location	Three or More Reduction Criteria Met	Proposed Schedule	VOCs	SVOCs	2-Chloro	Comments
<b>Upper Citronelle Aquifer</b>																
MW-18	76.0	Non-Detect	Every 2-Years				X	X				Terminate				Single well north of T-Lagoon. Optimization software determined this well to be unnecessary.
MW-20	65.0	Non-Detect	Every 2-Years				X	X				Every 2-Years	X			
MW-23	68.0	No Trend/Stable	Semi-Annual									Annual	X	X		
MW-27R	70.0	Decreasing/Stable	Semi-Annual					X		X		Annual	X	X		
MW-28	77.0	Non-Detect/No Trend	Semi-Annual				X	X	X	X	X	Every 2-Years	X			Redundant well adjacent and just North of UCRW-1. However, optimization software recommended sampling for VOCs.
MW-29	70.0	No Trend	Every 2-Years				X					Every 2-Years	X	X		
MW-30	70.0	Decreasing/No Trend	Every 2-Years				X	X				Every 2-Years	X	X		
MW-31	68.0	Increasing/No Trend	Semi-Annual									Annual	X	X	X	BCEM plume well northwest of the Formal area.
MW-35	70.0	Stable/Increasing	Semi-Annual									Annual	X	X		BCEM Plume well east of the V-Lagoon and north of the Formal area.
MW-37	75.0	Stable	Every 2-Years				X	X				Every 2-Years	X	X		
MW-38	74.0	Non-Detect/Stable	Every 2-Years				X	X				Every 2-Years	X	X		
MW-41	80.7	Non-Detect/No Trend	Every 2-Years				X	X	X	X	X	Terminate				Redundant well. VUCP-1 a short distance to the northeast is sufficient for the SW perimeter of the V-Lagoon area.
MW-60	65.0	Non-Detect	Every 2-Years				X	X				Every 2-Years	X	X		
MW-61	54.0	Non-Detect	Every 2-Years				X	X	X		X	Terminate				Unnecessary well in the far northeast of the site that does not monitor any plume.
MW-62	65.0	Decreasing	Semi-Annual		X		X	X				Annual	X	X		Capture Zone Performance Well on the eastern edge of BCCEM plume.
MW-63	80.0	No Trend/Decreasing	Semi-Annual				X					Annual	X	X		
MW-64	67.0	No Trend/Stable	Semi-Annual							X		Every 2-Years		X	X	
MW-65	70.0	Non-Detect	Semi-Annual				X	X				Terminate				Non-detect Capture Zone Sentinel Well located at the river. Optimization software determined that this well was unnecessary.
MW-66	74.2	Non-Detect	Every 2-Years				X	X	X	X	X	Terminate				Far southwest perimeter BCCEM plume well. No need to sample this well unless concentrations in UCRW-1 increase.
MW-67	69.0	Stable/Decreasing	Semi-Annual				X	X				Annual	X	X		Less important Capture Zone Performance Well. Western BCCEM plume area. Annual is sufficient due to stable/decreasing trend.
MW-68	70.0	Non-Detect/Stable	Semi-Annual				X	X				Annual	X	X		
MW-69	70.0	Decreasing/No Trend	Semi-Annual		X		X	X				Annual	X	X		Capture Zone Sentinel Well located at the north edge of BCCEM plume.
MW-70	69.5	Stable	Semi-Annual				X	X	X		X	Every 2-Years	X	X		Stable well southeast of T-Lagoon. Sampling every two years like the other T-Lagoon wells is sufficient.
MW-77	79.1	Non-Detect	Every 2-Years				X	X	X	X	X	Terminate				MW-63 is closer to the edge of the BCCEM plume and is sufficient for this area. MW-90, even further SE is also not needed.
MW-78	83.1	Non-Detect/No Trend	Semi-Annual				X	X				Annual	X	X	X	Capture Zone Sentinel Well located at the river with non-detect or very low concentrations. Annual monitoring is sufficient.
MW-79	69.1	Non-Detect	Semi-Annual				X	X	X	X	X	Terminate				Lesser Capture Zone Sentinel well that is not necessary and too far west. Optimization software recommended termination.
MW-80	75.9	Non-Detect	Every 2-Years				X	X	X	X	X	Terminate				Well is located too far west to monitor plume. MW-67 is a performance well located further east and is sufficient.
MW-81	80.1	Non-Detect	Every 2-Years				X	X	X	X	X	Every 2-Years	X			Well is located too far north and west to monitor plume. However, Optimization software recommended sampling for VOCs.
MW-89	64.0	Non-Detect	Every 2-Years				X	X				Every 2-Years	X	X		
MW-90	66.0	Non-Detect	Every 2-Years				X	X	X	X	X	Terminate				MW-77 is closer to the edge of the BCCEM plume and is sufficient for this area. MW-90, even further southeast is also not needed.
MW-95	66.0	Non-Detect/Stable	Semi-Annual					X				Annual	X	X		
MW-96	64.0	Stable/Decreasing	Semi-Annual		X			X				Annual	X	X	X	Capture Zone Performance Well located south of the Formal area at Omega Protein.
MW-97	62.0	Non-Detect	Semi-Annual				X	X				Annual	X	X		Non-detect Capture Zone Sentinel Well located south of the Formal area at the river. Annual monitoring should be sufficient.
MW-110	62.0	Non-Detect/Stable	Semi-Annual				X	X				Annual	X			
MW-111	66.3	Non-Detect	Semi-Annual				X	X				Every 2-Years	X			Non-detect T-Lagoon area plume perimeter well. Monitoring every two years like other T-Lagoon area UC wells is sufficient.
MW-112	72.0	Non-Detect	Every 2-Years				X	X	X	X	X	Terminate				Well is located too far north to monitor plume. MW-69 is a sentinel well located further south and is sufficient for this area.
MW-124	68.0	--	Every 2-Years				X	X	X			Terminate				No Access. Well is located across the river and we have no access to it.
MW-125	66.0	No Trend/Stable	Semi-Annual				X					Annual	X			
MW-126	69.0	Non Detect	Semi-Annual				X	X	X	X	X	Terminate				MW-126 is much too far west to be of use (at Highway 63). MW-68, located well to the east, is sufficient to monitor this area.
MW-132	78.0	Non Detect/Increasing	Semi-Annual				X	X	X			Terminate				North Woods remediation is complete and this well has been non-detect for 3 consecutive sampling events.
MW-138	62.5	Stable	Semi-Annual		X			X				Annual	X	X		Capture Zone Performance Well located north of V-Lagoon.
MW-144		--	Semi-Annual									Annual	X	X	X	New Formal area well with highest Upper Citronelle concentrations. Retain at semi-annual status.
UCRW-1	70.0	Decreasing/No Trend	Semi-Annual	SHUT DOWN			X	X				Annual	X	X	X	Recovery Well. No longer pumping but now used as a southwest perimeter BCCEM plume monitoring well.
UCRW-2	70.0	Decreasing/Mixed	Semi-Annual	X								Annual	X	X	X	Recovery Well
UCRW-3	70.0	No Trend/Decreasing	Semi-Annual	X								Annual	X	X	X	Recovery Well
UCRW-4	61.0	Decreasing	Semi-Annual	X				X				Annual	X	X	X	Recovery Well
UCRW-5	61.0	Decreasing/No Trend	Semi-Annual	X				X				Annual	X	X	X	Recovery Well
VUCP-1	75.0	Stable/Decreasing	Every 2-Years				X	X				Every 2-Years	X	X		Retain in place of MW-41.
VUCR-1R	71.0	No Trend/Mixed	Semi-Annual	X								Annual	X	X	X	Recovery Well - Terminate pumping due to potential migration of COCs. Reduce sampling to annual.

**TABLE 4  
SUMMARY OF EVALUATION CRITERIA SCREENING INDICATING CURRENT AND PROPOSED NEW MONITORING WELL SAMPLING SCHEDULES  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Well ID	Well Depth (feet BGS)	Overall Trend	Current Schedule	Active Recovery Well	Critically Located Capture Zone Performance or Sentinel Well	Hazardous Waste Landfill Leak Detection Well	Lower Concentration Well	Stable, Decreasing or Non-Detect Statistical Trend	Non-Important Non-Strategic Location	Other Nearby Wells in a Similar or Better Location	Three or More Reduction Criteria Met	Proposed Schedule	VOCs	SVOCs	2-Chloro	Comments
<b>Lower Citronelle Aquifer</b>																
LCRW-1	105.0	Non-Detect/No Trend	Semi-Annual	X			X	X				Annual	X	X		Recovery Well
LCRW-2	117.0	Stable	Semi-Annual	X				X				Annual	X	X		Recovery Well
LCRW-3	109.0	Decreasing	Semi-Annual	X				X				Annual	X	X		Recovery Well
LCRW-4	102.0	Increasing/Stable	Semi-Annual	X			X		X			Annual	X	X		Recovery Well
LCRW-5	106.0	Increasing/Stable	Semi-Annual	X			X		X			Annual	X	X	X	Recovery Well
LCRW-6	112.0	Decreasing	Semi-Annual	X				X				Annual	X	X	X	Recovery Well
LCRW-7	107.0	Stable/No Trend	Semi-Annual	X			X	X	X		X	Annual	X	X		Recovery Well
LCRW-8	108.0	Decreasing	Semi-Annual	SHUT DOWN				X				Annual	X	X		Recovery Well
LCRW-9	112.0	Decreasing	Semi-Annual	X				X				Annual	X	X		Recovery Well
MW-21	93.5	Non-Detect/Stable	Every 2-Years				X	X	X	X	X	Terminate				Unnecessary well southeast of industrial landfill. Trace level concentrations only. MW-116 further south more closely monitors the BCEM plume
MW-25R	111.0	Stable	Every 2-Years				X	X				Every 2-Years	X	X		
MW-44	110.6	Non Detect/No Trend	Every 2-Years				X	X				Terminate				Southwest corner of Formal area just beyond plume. Optimization software recommended terminating.
MW-45	105.1	Stable/Mixed	Semi-Annual				X	X				Terminate				Southwest plume perimeter well. Optimization software recommended termination.
MW-46	100.7	Decreasing	Semi-Annual		X		X	X		X	X	Annual	X	X		Capture Zone Performance Well adjacent to LCRW-3.
MW-72	90.0	Non-Detect	Every 2-Years				X	X	X		X	Terminate				Unnecessary. Well is way too far north and east to monitor a plume.
MW-73	109.0	Non-Detect	Every 2-Years				X	X				Every 2-Years	X	X		
MW-82R	114.3	Non-Detect	Every 2-Years				X	X	X	X	X	Terminate				Well is located too far south to monitor plume and is non-detect. MW-102 is further north and sufficient.
MW-84	105.0	Decreasing/Non Detect	Semi-Annual				X	X				Annual	X	X		Decreasing/non-detect trace level only Capture Zone Sentinel Well west of V-Lagoon. Annual monitoring is sufficient.
MW-85	116.1	No Trend/Stable	Every 2-Years				X		X	X	X	Every 2-Years	X	X		
MW-91	105.0	Non Detect/No Trend	Semi-Annual				X	X	X	X	X	Terminate				Unnecessary Capture Zone Sentinel Well far west of V-Lagoon. Terminate in favor of MW-84 as the only sentinel well here.
MW-92	116.0	No Trend/Increasing	Semi-Annual							X		Terminate				Unnecessary. Immediately adjacent to LCRW-8
MW-98	110.5	Non Detect/No Trend	Semi-Annual				X	X				Annual	X	X	X	Stable trace level only Capture Zone Sentinel Well at river. Annual monitoring is sufficient.
MW-99	107.7	Decreasing	Semi-Annual		X			X				Annual	X	X		Capture Zone Performance Well at river.
MW-100	109.0	Stable	Every 2-Years				X	X	X	X	X	Every 2-Years	X	X		
MW-101	107.0	Decreasing	Semi-Annual		X		X	X				Annual	X	X		Capture Zone Performance Well located northwest of the V-Lagoon in the edge of the BCEM plume.
MW-102	107.0	Stable/No Trend	Semi-Annual				X	X				Annual	X	X	X	
MW-113	110.0	Decreasing	Semi-Annual		X		X	X				Annual	X	X		Capture Zone Performance Well at southeast BCEM plume edge.
MW-114	110.5	Decreasing	Semi-Annual				X	X		X		Annual	X	X		
MW-115	111.5	Stable	Semi-Annual		X		X	X		X	X	Terminate				Capture Zone Performance Well adjacent to LCRW-7. However, optimization software recommended termination.
MW-116	105.0	Non Detect/Stable	Every 2-Years				X	X				Every 2-Years	X	X		
MW-117	106.0	Non Detect	Semi-Annual				X	X	X		X	Terminate				Unnecessary far western BCEM plume perimeter well. MW-118 in this area is sufficient.
MW-118	114.5	Non Detect	Every 2-Years				X	X	X		X	Every 2-Years		X		
MW-119	104.0	Non Detect	Every 2-Years				X	X	X	X	X	Terminate				Well is located too far north to monitor the BCEM plume. Terminate in favor of MW-140, which is further south and closer.
MW-123 / LCRW-10	110.0	Stable/No Trend	Semi-Annual	X, NEW	X			X				Annual	X	X		Capture Zone Performance Well recently converted to a recovery well.
MW-127	116.5	--	Every 2-Years				X		X			Terminate				Located across the river and we have no-access to it.
MW-128	111.0	Non Detect	Semi-Annual				X	X				Every 2-Years	X	X		Non-detect southeast BCEM plume perimeter well. Monitoring every other year is sufficient.
MW-129	107.0	Stable/No Trend	Semi-Annual				X	X				Annual	X	X		Non-detect or trace level only Capture Zone Sentinel Well at southeast BCEM plume perimeter. Annual monitoring is sufficient.
MW-130	109.0	Non Detect/Stable	Semi-Annual				X	X				Every 2-Years	X	X		Non-detect/stable north central BCEM plume perimeter well. Monitoring every other year is sufficient.
MW-131	106.0	Non Detect	Semi-Annual				X	X	X	X	X	Terminate				Well is located too far north to monitor the BCEM plume. Terminate in favor of MW-116 and MW-130, which are further south.
MW-139	126.0	Non Detect/No Trend	Semi-Annual				X	X	X	X	X	Terminate				Well is too far west and south to monitor plume. MW-73 and MW-43 are closer in and more than sufficient.
MW-140	104.0	Stable	Semi-Annual				X	X				Annual	X	X		Stable Capture Zone Sentinel Well located northwest of V-Lagoon. Annual monitoring is sufficient.
MW-141	102.0	Decreasing	Semi-Annual		X		X	X				Annual	X	X		Capture Zone Performance Well located in northeast BCEM plume area.
MW-142	109.0	Non Detect/Mixed	Semi-Annual				X	X				Annual	X	X		Mostly non-detect Capture Zone Sentinel Well in northeast BCEM plume perimeter. Annual monitoring is sufficient.
MW-143	110.0	Stable/Increasing	Semi-Annual		X							Annual	X	X		Capture Zone Performance Well at northeast BCEM plume edge.
<b>Graham Ferry Aquifer</b>																
MW-83	144.0	Non Detect	Every 2-Years				X	X				Every 2-Years	X	X		Retain
MW-120	176.0	Non Detect	Every 2-Years				X	X				Every 2-Years	X	X		Retain
MW-121	176.0	Non Detect	Every 2-Years				X	X				Every 2-Years	X	X		Retain
MW-122	176.0	Non Detect	Every 2-Years				X	X				Every 2-Years	X	X		Retain

Notes:

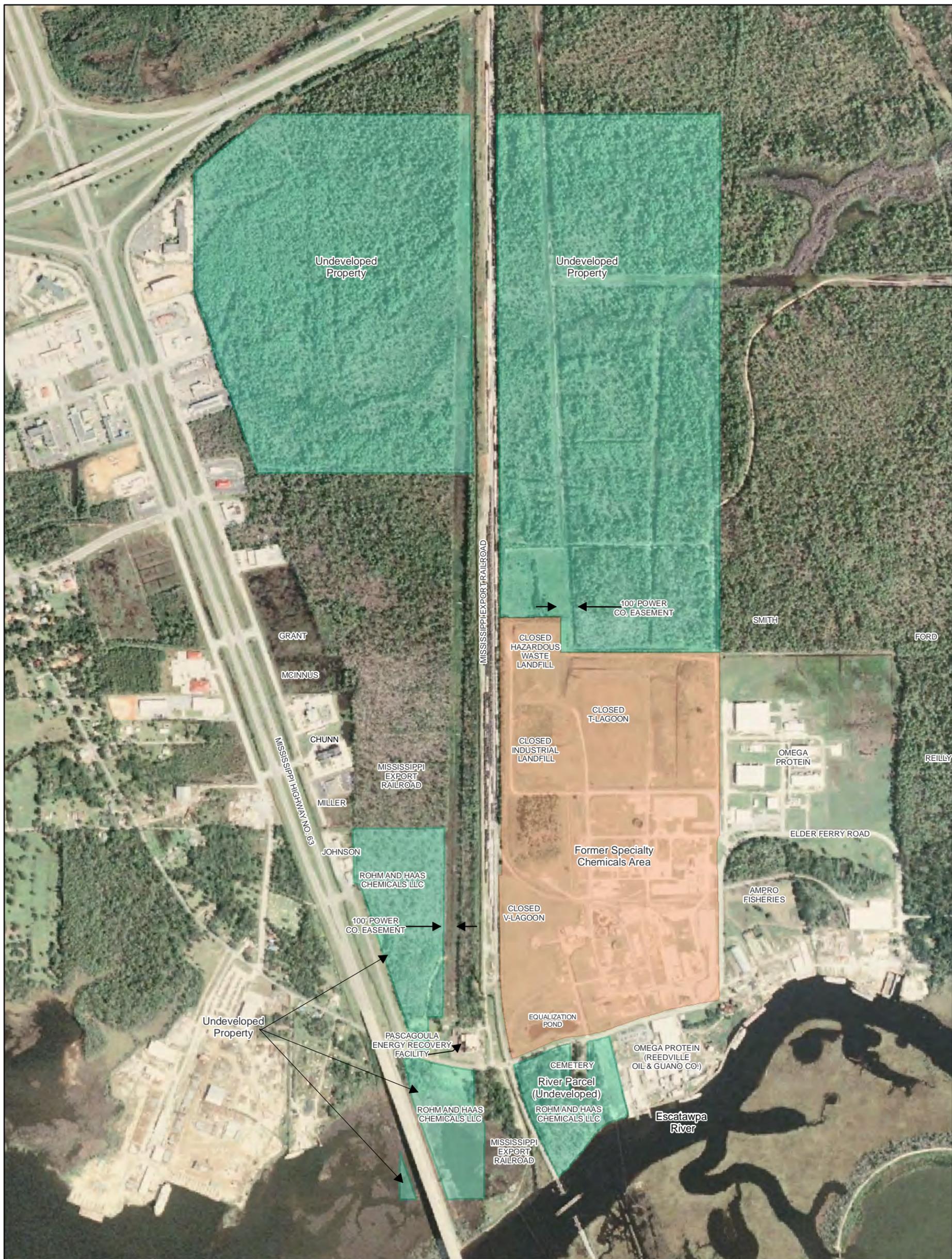
- Red shading indicates hazardous waste landfill leak detection monitoring wells on a permitted semi-annual status.
- Brown shading indicates recovery wells.
- Orange shading indicates proposed annual monitoring status.
- Green shading indicates proposed every 2-years monitoring status.
- Purple shading indicates wells proposed to be terminated from the monitoring program.
- Yellow shading indicates increasing or potentially increasing trends.

**TABLE 5  
SUMMARY OF GROUNDWATER MONITORING PROGRAM  
ROHM AND HAAS CHEMICALS LLC  
MOSS POINT, MISSISSIPPI**

Type of Well to be Sampled	Number of Included Wells and Sampling Frequency								
<b>Alluvial Aquifer</b>									
	Semi-Annual		Annual		Every 2-Years		Terminate	Total Wells to Sample	
	Current	Proposed	Current	Proposed	Current	Proposed		Current	Proposed
	Recovery Wells	12	0	0	9	0	0	3	12
Monitoring Wells	36	5	0	18	34	16	31	70	39
Total	48	5	0	27	34	16	34	82	48
<b>Upper Citronelle Aquifer</b>									
	Semi-Annual		Annual		Every 2-Years		Terminate		
	Current	Proposed	Current	Proposed	Current	Proposed		Current	Proposed
	Recovery Wells	6	0	0	6	0	0	0	6
Monitoring Wells	25	0	0	17	18	13	13	43	30
Total	31	0	0	23	18	13	13	49	36
<b>Lower Citronelle Aquifer</b>									
	Semi-Annual		Annual		Every 2-Years		Terminate		
	Current	Proposed	Current	Proposed	Current	Proposed		Current	Proposed
	Recovery Wells	10	0	0	10	0	0	0	10
Monitoring Wells	22	0	0	13	12	8	13	34	21
Total	32	0	0	23	12	8	13	44	31
<b>Graham Ferry Aquifer</b>									
	Semi-Annual		Annual		Every 2-Years		Terminate		
	Current	Proposed	Current	Proposed	Current	Proposed		Current	Proposed
	Recovery Wells	0	0	0	0	0	0	0	0
Monitoring Wells	0	0	0	0	4	4	0	4	4
Total	0	0	0	0	4	4	0	4	4
<b>All Aquifers Combined</b>									
							Terminate	Grand Total	
Recovery Wells							3	Current	Proposed
Monitoring Wells							57	28	25
Total							60	151	94
								179	119

## FIGURES

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Site Locator Map



- Notes:
1. Property boundaries based on tax parcels.
  2. Tax parcels obtained from Jackson County GIS Department, Mississippi, April 1, 2009.



Figure 1

Rohm and Haas Chemicals LLC  
Moss Point, Mississippi Site

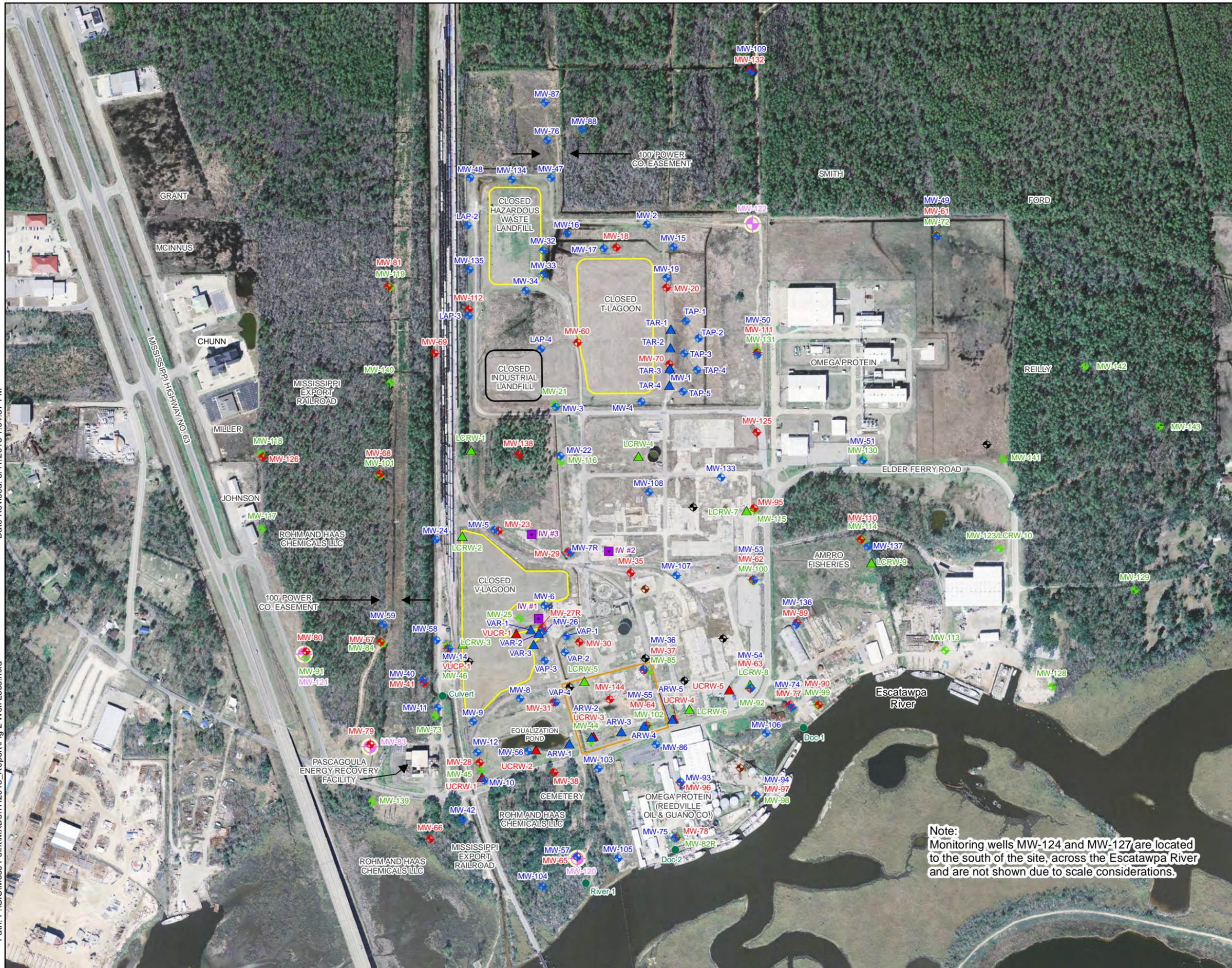
Site Location  
and Approximate  
Site Boundaries

**PARSONS**

851 E I-65 Service Rd., Suite #704; Mobile, Alabama 36606  
Phone: (251) 243-9841

Date Revised: 6/11/2015 1:04:57 PM

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N

**LEGEND**

**Alluvial Wells**

- ◆ Monitoring Well/Piezometer
- ▲ Recovery Well

**Upper Citronelle Wells**

- ◆ Monitoring Well/Piezometer
- ▲ Recovery Well

**Lower Citronelle Wells**

- ◆ Monitoring Well/Piezometer
- ▲ Recovery Well

**Graham Ferry Wells**

- ◆ Monitoring Well
- ◆ Present Water Supply Well
- ◆ Closed Water Supply Well
- ◆ Former Deep Injection Well
- Surface Water Monitoring Point

Regulated Units

Former Formal bis(2-Chloroethoxy) Methane Production Area

0 250 500 1,000 Feet

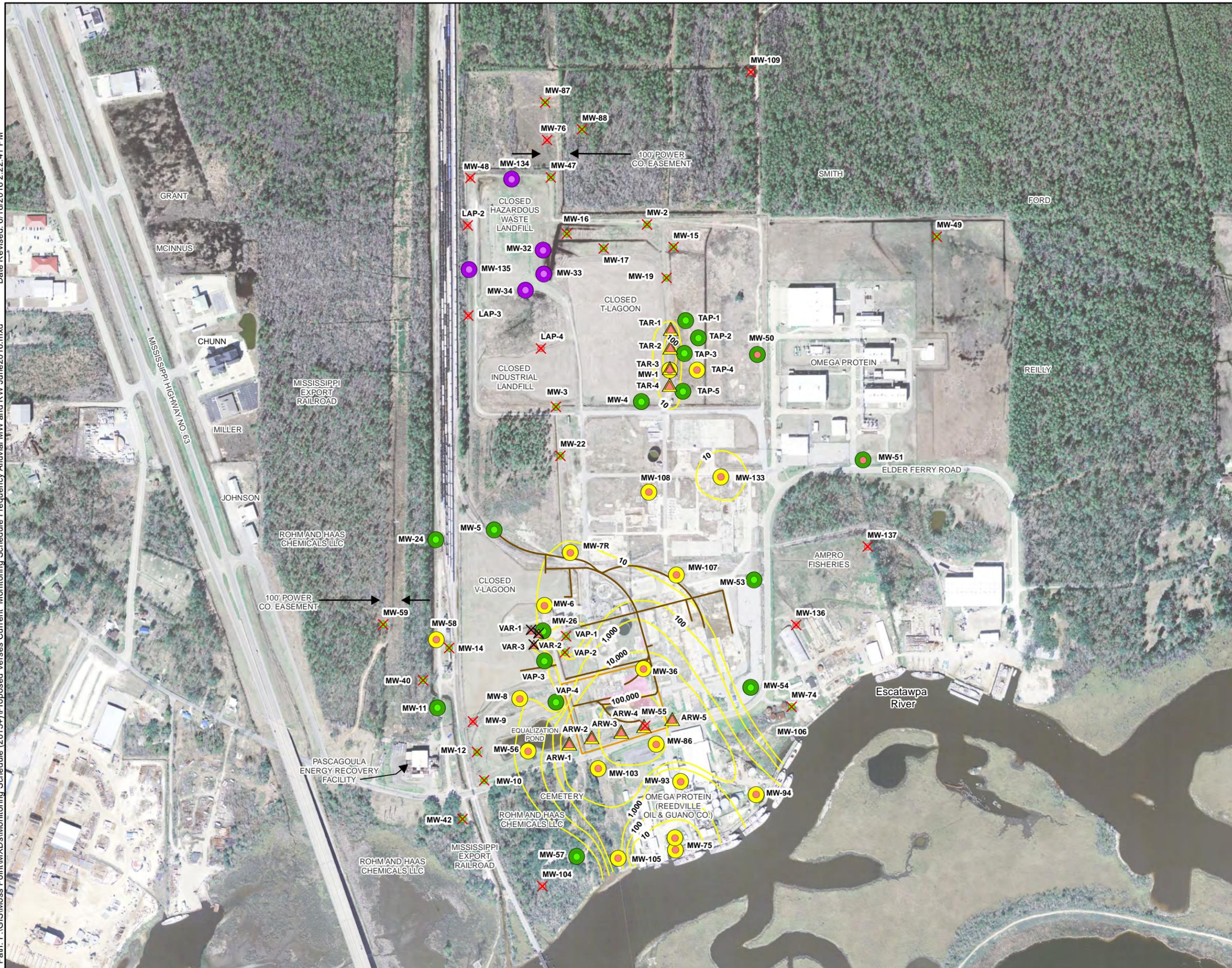
SCALE: 1" = 500'

**FIGURE 2**

Rohm and Haas Chemicals LLC  
Moss Point, Mississippi Site

Well Locations  
And Regulated Units

**Note:**  
Monitoring wells MW-124 and MW-127 are located to the south of the site, across the Escatawpa River and are not shown due to scale considerations.



**LEGEND**

- Former Open Ditch
- Actual Observed DNAPL Plume
- Former Formal Area
- Alluvial BCEM Concentration Isocon, ug/L
- CURRENT SAMPLING FREQUENCY:**
- Landfill Leak MW, Semi-Annual
- Monitoring Well, Semi-Annual
- Monitoring Well, Every 2-Years
- Recovery Well, Semi-Annual
- RECOMMENDED SAMPLING FREQUENCY:**
- Landfill Leak MW, Semi-Annual
- Monitoring Well, Annual
- Monitoring Well, Every 2-Years
- Recovery Well, Annual
- Monitoring Well, Terminate
- Recovery Well, Terminate



SCALE: 1" = 500'

**FIGURE 3**

Rohm and Haas Chemicals LLC  
Moss Point, Mississippi Site

Current and Proposed  
Sampling Schedule Frequency  
Alluvial Aquifer

**PARSONS**

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Phone: (251) 243-9841

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**LEGEND**

- Former Open Ditch
- Actual Observed DNAPL Plume
- Former Formal Area
- Upper Citronelle BCEM
- Concentration Isocon, ug/L
- Current:**
  - Monitoring Well, Semi-Annual
  - Monitoring Well, Every 2-Years
  - Recovery Well, Semi-Annual
- Recommended:**
  - Monitoring Well, Annual
  - Monitoring Well, Every 2-Years
  - Recovery Well, Annual
  - Monitoring Well, Terminate



SCALE: 1" = 500'

**FIGURE 4**

Rohm and Haas Chemicals LLC  
Moss Point, Mississippi Site

Current and Proposed  
Sampling Schedule Frequency  
Upper Citronelle Aquifer

**PARSONS**

851 E I-65 Service Rd., Suite #704; Mobile, Alabama 36606  
Phone: (251) 243-9841

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**LEGEND**

- Former Open Ditch
- Actual Observed DNAPL Plume
- Former Formal Area
- Lower Citronelle 2015 BCCEM Concentration Isocon, ug/L

**Current:**

- Monitoring Well, Semi-Annual
- Monitoring Well, Every 2-Years
- Recovery Well, Semi-Annual

**Recommended:**

- Monitoring Well, Annual
- Monitoring Well, Every 2-Years
- Recovery Well, Annual
- Monitoring Well, Terminate



SCALE: 1" = 500'

**FIGURE 5**

Rohm and Haas Chemicals LLC  
Moss Point, Mississippi Site

Current and Proposed  
Sampling Schedule Frequency  
Lower Citronelle Aquifer

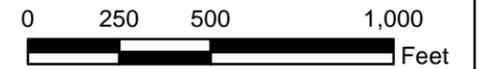
**PARSONS**

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Phone: (251) 243-9841



**LEGEND**

- Former Open Ditch
- Actual Observed DNAPL Plume
- Former Formal Area
- CURRENT SAMPLING FREQUENCY:**
- Monitoring Well, Every 2-Years
- RECOMMENDED SAMPLING FREQUENCY:**
- Monitoring Well, Every 2-Years



SCALE: 1" = 500'

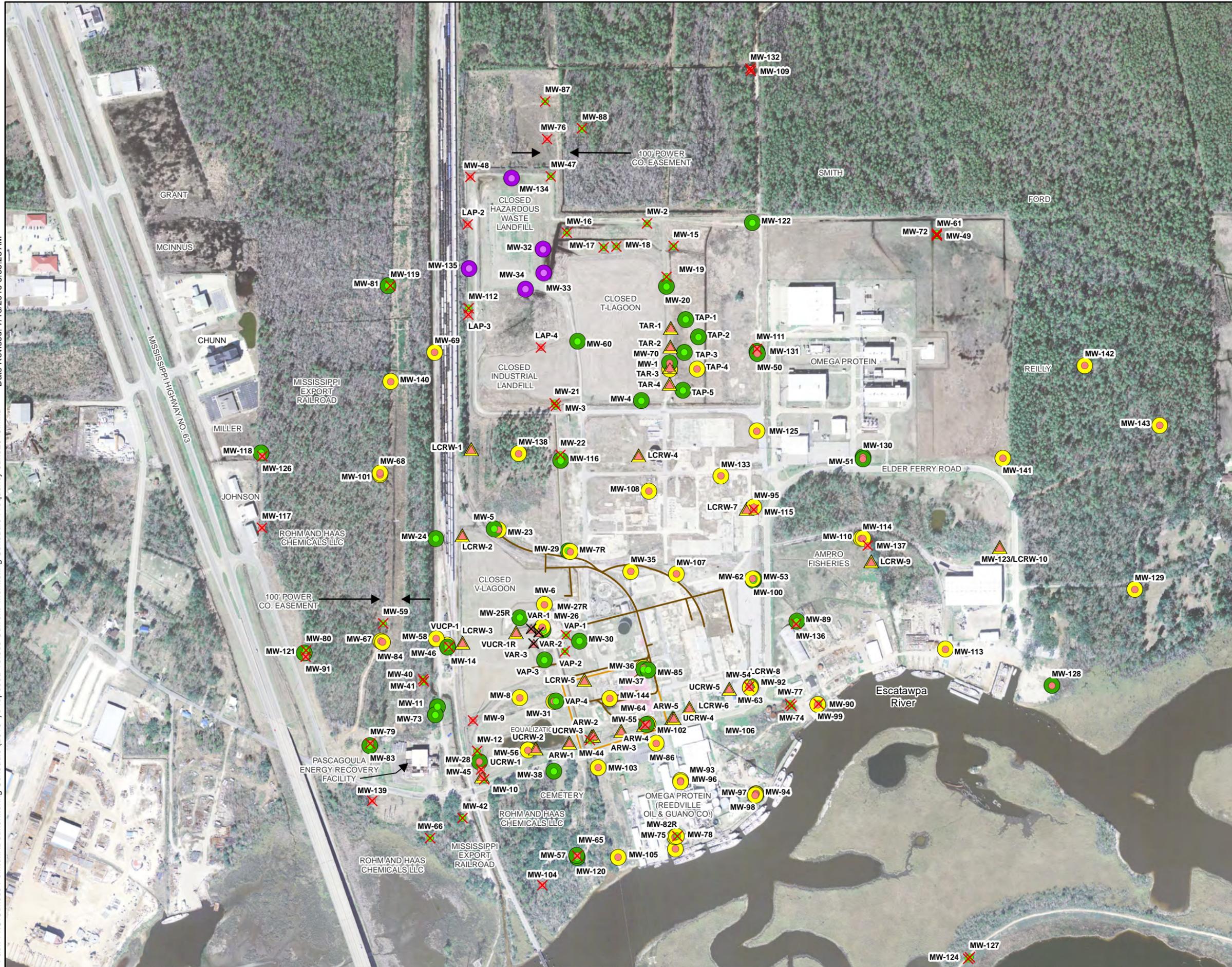
**FIGURE 6**

Rohm and Haas Chemicals LLC  
Moss Point, Mississippi Site

Current and Proposed  
Sampling Schedule Frequency  
Graham Ferry Aquifer

**PARSONS**

851 E I-65 Service Rd., Suite #704; Mobile, Alabama 36606  
Phone: (251) 243-9841



**LEGEND**

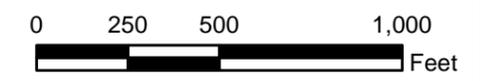
- Former Open Ditch
- Former Formal Area
- Actual Observed DNAPL Plume

**CURRENT SAMPLING FREQUENCY:**

- Landfill Leak MW, Semi-Annual
- Monitoring Well, Semi-Annual
- Monitoring Well, Every 2-Years
- Recovery Well, Semi-Annual

**RECOMMENDED SAMPLING FREQUENCY:**

- Landfill Leak MW, Semi-Annual
- Monitoring Well, Annual
- Monitoring Well, Every 2-Years
- Recovery Well, Annual
- Monitoring Well, Terminate
- Recovery Well, Terminate



SCALE: 1" = 500'

**FIGURE 7**

Rohm and Haas Chemicals LLC  
Moss Point, Mississippi Site

Current and Proposed  
Sampling Schedule Frequency  
For All Aquifers

