Superfund Records Center
SITE: Whitney Barrel
BREAK: 11.7
OTHER: 282380
SDMS DocID 282380

Olin

P.O. BOX 248, 1186 LOWER RIVER ROAD, NW, CHARLESTON, TN. 37310-0248
(423) 336-4000 FAX: (423) 336-4166

March 15, 2004

U. S. Environmental Protection Agency
Martha Bosworth, Enforcement Coordinator
Office of Site Remediation and Restoration (HBS)
One Congress Street, Suite 1100
Boston MA 02114

ATTN: Wells G&H Case Team

Re: Whitney Barrel Company

Dear Ms. Bosworth,

Enclosed please find Olin Corporation's response to EPA's 104(e) Information Request dated 12/15/2003 pertaining to Whitney Barrel Company.

Upon receipt of EPA's request, Olin undertook a diligent investigation to identify information or documents responsive to the Request. As indicated in Olin's response the only relationship with Whitney Barrel which Olin has identified involved a one-time purchase of two 55-gallon drums from Whitney Barrel in December 1982.

Please direct all future correspondence relating to this matter to me at the address above.

Very truly yours,

Olin Corporation

Curtis M. Richards

Curtis M. Richards, Vice President, Environment, Health and Safety

SDMS Doc ID 541080

CERTIFICATION OF RESPONSES TO REQUEST

This response is not made on the basis of personal knowledge unless otherwise indicated and was prepared by or with the assistance of agents, representatives, and employees of Olin Corporation or others believed to have relevant information, and on the advice of counsel, which advice was relied upon herein. The answers set forth herein, subject to inadvertent or undiscovered errors or omissions, are based on and therefore necessarily limited by the records and information still in existence, currently recollected, thus far discovered in the course of the preparation of this response, and currently available to the undersigned. Olin Corporation reserves the right to supplement this response in the event that it locates additional information which makes such supplementation appropriate.

Curt M. Richards

Curt M. Richards
V.P. Environment, Health & Safety

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Curtis M. Richards, Vice President, Environment, Health and Safety

RESPONSE OF OLIN CORPORATION TO 104(E) INFORMATION REQUEST

WHITNEY BARREL

0041-0015

RESPONSE TO 104(E) INFORMATION REQUEST
WHITNEY BARREL

Preliminary Statement

In a Request for Information attached to a letter dated December 15, 2003, the Environmental Protection Agency, EPA New England ("EPA"), asked Olin Corporation ("Olin" or the "Company") to provide certain information and documents in connection with EPA's investigation of releases or threatened releases at the Whitney Barrel Company, 256 Salem Street, Woburn, Massachusetts, ("Whitney Barrel") situated within the Wells G&H Superfund Site in Woburn, Massachusetts. Specifically, EPA has requested information and documents explaining Olin's relationship to Whitney Barrel. Olin submits this response to EPA's information request (the "Request") in accordance with Section 104(e) of CERCLA, 42 U.S.C. § 9604(e), as amended, and Section 3007 of RCRA, 42 U.S.C. § 6927, and in accordance with extensions of time as confirmed in a letter dated December 23, 2003, from Stuart N. Roth to Martha Bosworth, a letter dated January 23, 2004 from Laurie Burt of Foley Hoag to Ms. Bosworth, and a letter dated February 25, 2004, from Randall Kromm of Foley Hoag to Ms. Bosworth and confirmed by Ms. Bosworth in an e-mail to Mr. Kromm dated February 26, 2004.

Upon receipt of EPA's request, Olin undertook a diligent investigation (the "investigation") to identify information or documents responsive to the Request. The investigation focused on facilities affiliated with Olin during the period being investigated (the "relevant period") that were located within a 25-mile radius of the Whitney Barrel facility.[1] Two such facilities were identified, one located at 51 Eames Street in Wilmington, Massachusetts, and the other located in Cambridge, Massachusetts.

The Wilmington facility was acquired by Olin in 1980 and used for manufacturing operations until 1986, when it was closed. This property is part of a site classified as a Tier 1A disposal site under M.G.L. c. 21E ("Chapter 21E") and the Massachusetts Contingency Plan ("MCP"). Extensive information about environmental conditions and historical operations at the facility have been developed and submitted to regulatory agencies in the context of remedial work at this facility that has been ongoing for nearly two decades. In preparing this response, Olin reviewed the indexes of some 900 boxes of documents related to operations at this location. Approximately 150 boxes of material were identified as potentially containing responsive information and were further reviewed for relevant and responsive documents. Olin also contacted current and former employees believed to have relevant information. The only relationship which Olin has identified between the Wilmington facility and Whitney Barrel involved a one-time purchase of two 55-gallon drums from Whitney Barrel in December 1982 (see responses to question 7 below).

[1] Olin objects to the scope of the Request to the extent that it seeks extensive information about operations and practices over a 35-year period for any and all Olin-affiliated facilities located in four New England states, without suggesting any basis for any business or contractual relationship of such Olin-related facilities with the Whitney Barrel facility. If EPA has information suggesting that any other facility may have a connection to the Whitney Barrel facility in Woburn, Massachusetts, Olin asks that EPA provide that information.

The second facility, a manufacturing facility[2] located in Cambridge, Massachusetts, was apparently operated by Olin Industries, Inc., in the early 1950's. Based on available records, Olin believes that this facility manufactured polyethylene sheet and tubing. Olin has no further information or records relating to the Cambridge facility. Accordingly, this response is made based on information obtained regarding the 51 Eames Street facility during the period of Olin's ownership.[3] If EPA has specific information indicating that any facility affiliated with Olin, including the Olin facility at 51 Eames Street, Wilmington, Massachusetts, has or may have done business with Whitney Barrel, Olin requests that EPA provide such information. Olin reserves the right to supplement its response, as appropriate, if such information is made available.

In preparing this response, Olin notes that it is Olin's practice and policy to protect the privacy of its employees and not to provide certain personal information, including Social Security numbers, to outside entities. Accordingly, Olin has provided last known addresses and, to the extent available, telephone numbers, of individuals identified in response to this Request.

If, upon review of this response to the Request, EPA requires additional information and documents, please contact Curt Richards of Olin (See Question 1(c) below for contact information). Olin understands that EPA is primarily interested in information relating to business relationships between Olin and Whitney Barrel and does not require cumulative or duplicative documentation evidencing transactions with other entities. Based on its investigation and subject to the foregoing understandings and reservations, Olin makes the following response to the Request.

Specific Responses to Information Request

1. **General Information About Respondent**
   Note: All questions in this section refer to the present time unless otherwise indicated.

   a. Provide the full legal name and mailing address of the Respondent.

   Response to Question 1(a):

   Olin Corporation
   501 Merritt 7
   Norwalk, CT 06856

[2] This facility was owned/operated by the Harwid Company, Inc., acquired by Olin Industries, Inc., in 1950, and operated as a subsidiary until it was "folded into" Olin Industries, Inc., as a part of its Film Division. So far as Olin has been able to determine, the Cambridge facility was no longer operating as of 1954. For information about the history of Olin Corporation and its relationship to Olin Industries, Inc., see response to Question 2(a).

[3] Although Olin acquired the facility in September 1980, Olin has, in the course of ongoing remedial activities at the property become aware of some information and documents concerning operations and practices prior to its acquisition of the facility. See Response to Question 8(b). Those documents have in some cases been obtained through public records requests to regulatory agencies. For EPA's convenience, Olin's response refers in some instances to such information and documents. While Olin has no reason to believe that this information is incorrect, Olin has not attempted to independently verify this information.

b. For each person answering these questions on behalf of Respondent, provide:

   i. Full name
   ii. Title
   iii. Business address; and
   iv. Business telephone number.

Response to Question 1(b): This response is made on behalf of Olin by:

Curtis M. Richards
Vice President, Environment, Health & Safety
Olin Corporation
1186 Lower River Road, N.W.
P.O. Box 248
Charleston, TN 37310
(423) 336-4000 (telephone)

This response is not made on the basis of personal knowledge unless otherwise indicated and was prepared by or with the assistance of agents, representatives and employees of Olin Corporation or others believed to have relevant information, and on the advice of counsel, which advice was relied upon herein. The answers set forth herein, subject to inadvertent or undiscovered errors or omissions, are based on and therefore necessarily limited by the records and information still in existence, currently recollected, thus far discovered in the course of the preparation of this response, and currently available to the undersigned.

c. If Respondent wishes to designate an individual for all future correspondence concerning this Site, including any legal notices, please so indicate here by providing that individual's name, address, and telephone number.

Response to Question 1(c): Future correspondence concerning this Site, including any legal notices, should be directed to Curtis M. Richards, Vice President, Environment, Health & Safety, Olin Corporation. Mr. Richards' contact information is provided in the response to Question 1(b).

d. Provide the names of all Superfund sites in Region I (New England) for which Respondent has received a 104(e) Request for Information Letter from EPA.

Response to Question 1(d): As stated in the Preliminary Statement, Olin is responding on behalf of the facility at 51 Eames Street in Wilmington, MA. On information and belief, 104(e) Requests seeking information about the 51 Eames Street facility have been received for the following Superfund sites in Region I:

- Charles George Land Reclamation, Tyngsboro, MA
- Industri-Plex Superfund Site/Wells G&H Superfund Site, and associated

Halls Brook Holding Area and Aberjona River Study (the "Aberjona River 104(e)")

- Whitney Barrel Company, Woburn, MA

2. **Respondent's Legal Status**

Note: All questions in this section refer to the present time unless otherwise indicated.

a. If the Respondent has ever done business under any other name;

i. List each such name; and
ii. List the dates during which such name was used by Respondent.

Response to Question 2(a): Olin Corporation is the result of the merger in August 1954 of Olin Industries, Inc., and Mathieson Chemical Corporation, both of which were incorporated in 1892. Between 1954 and 1969 the company did business under the name Olin Mathieson Chemical Corporation. In 1969, the name was shortened to Olin Corporation. Further information regarding Olin's corporate history is available at Olin's website at:

http://www.olin.com/about/history.asp

A copy of this information is attached hereto as **Exhibit A**.

b. If Respondent is a corporation, provide:

i. The date of incorporation;
ii. State of incorporation; and
iii. Agent for service of process.

Response to Question 2(b): Olin was incorporated in 1892 and is incorporated in the State of Virginia. Olin's agent for service of process in Massachusetts is CT Corporation Systems, 101 Federal Street, Boston, Massachusetts 02110.

c. If Respondent was a business entity other than a corporation, provide:

i. The type of organization (sole proprietorship, partnership, trust, etc.)
ii. The date the business began; and
iii. Owner, managing partner, or other equivalent person in charge.

Response to Question 2(c): Not applicable.

d. If Respondent is, or was at any time during the period being investigated, a subsidiary of, otherwise owned or controlled by, or otherwise affiliated with another corporation, then describe the nature of each such corporate relationship, including but not limited to:

i. a general statement of the nature of the relationship
ii. the dates such relationship existed
iii. the percentage of ownership of Respondent that is held by such other entity; and
iv. for each such affiliated entity provide the names and complete addresses of its parent, subsidiary, and otherwise affiliated entities.

Response to Question 2(d): Not applicable.

e. Identify all of Respondent's predecessors-in-interest and provide a description of the relationship between Respondent and each of those predecessors-in-interest.

Response to Question 2(e): The corporate history of Olin is described in the response to Question 2(a). As described in the Preliminary Statement to this response, Olin acquired the Harwid Company, including a facility it then owned in Cambridge, Massachusetts, in 1950. Olin has identified no other predecessor-in-interest of Olin that had a facility within a 25-mile radius of Whitney Barrel.

To the extent that EPA seeks information concerning predecessor owners of the Wilmington plant, a list of those owners is provided in **Exhibit B**. The 51 Eames Street facility began manufacturing operations in 1953 and operations continued under various owners until Olin acquired the facility in 1980. None of the prior owners have or had any corporate relationship with Olin.

f. If Respondent no longer exists as the same legal entity it was during the period being investigated because of transactions involving asset purchases or mergers, provide;

i. the titles and dates of the transactions and copies of documents that embody the terms of such transactions (i.e. purchase agreements, merger and dissolution agreements, etc.);
ii. the identities of the seller, buyer, and any other parties to such transactions
iii. a brief statement describing the nature of the asset purchases or mergers
iv. a brief statement describing and copy(s) of documents embodying any/all indemnification agreements.

Response to Question 2(f): See responses to Questions 2(a) and 2(e).

g. If Respondent has filed for bankruptcy, provide:

i. the U.S. Bankruptcy Court in which the petition was filed
ii. the document numbers of such petition
iii. the date the bankruptcy petition was filed
iv. whether the petition is under Chapter 7 (liquidation), Chapter 11 (reorganization), or other provision

v. a brief description of the current status of the petition

Response to Question 2(g): Not applicable.

3. Respondent's Operations

Note: All questions in this section refer to the period being investigated (1950-1985) unless otherwise indicated.

Also note: All questions in the Section refer to facilities owned or operated by the Respondent within Massachusetts, Rhode Island, New Hampshire or Maine and to any other facility owned or operated by Respondent which had any business or other contractual relationship with Whitney Barrel Company. **Please note that it is not necessary to identify or provide information about any facilities that are engaged solely in clerical/office work.**

General Response to Question 3: As indicated in its Preliminary Statement above, Olin's response to the following question and its subparts is limited to Olin's manufacturing operations at 51 Eames Street in Wilmington, Massachusetts during the period being investigated.

a. Provide the complete address of Respondent's plants and other buildings or structures where Respondent carried out its operations.

Response to Question 3(a):
Olin Corporation
51 Eames Street,
Wilmington, MA 01887

b. Provide a brief description of the nature of Respondent's operations at each location including:

i. The date such operations commenced and concluded
ii. The types of work performed at each location, including but not limited to the industrial, chemical, or institutional processes undertaken at each location
iii. The type of products manufactured, recycled, recovered, treated or otherwise processed in these operations

Response to Question 3(b): As described in the Preliminary Statement, Olin acquired the facility at 51 Eames Street on September 15, 1980. Manufacturing operations at the facility ceased by 1986. During the period of Olin's operations, the facility manufactured chemical blowing agents, stabilizers, antioxidants and other specialty chemicals for the rubber and plastics industry. The principal products manufactured by Olin at the site include Opex®, Kempore®, Kempore® dispersions and Wytox®. Prior to Olin's ownership, the facility had been involved in chemical

manufacturing operations under a series of predecessor owners since 1953. Those owners are identified in **Exhibit B**. There are no present business operations at the facility.

c. Enclosure F provides a list of chemical constituents conclusively identified to date at the site. For each facility identified in 3.a above, identify, to the best of your knowledge, any chemical constituents listed in Enclosure F that:

   i. would have been produced, processed, or used in connection with facility operations; or
   ii. would have been present in materials produced, processed, or used in connection with facility operations

   Response to Question 3(c): A copy of Enclosure F, marked to identify those constituents that, based on information and belief, were produced, processed or used in connection with facility operations or that would have been in present in materials produced, processed or used in connection with facility operations, is attached as **Exhibit C.**

d. If the nature or size of Respondent's operations changed over time, describe those changes, the dates they occurred, and the nature of the current business at each such location, including but not limited to a brief description of the major products or services Respondent manufactures or provides.

   Response to Question 3(d): Olin's operations at the 51 Eames Street facility during the period being investigated are described in the response to Question 3(b). Approximately 60 people were employed by the facility during the years in which Olin conducted manufacturing operations at the facility. The facility was closed in 1986 and there have been no manufacturing operations at the facility since that time.

e. List the products Respondent manufactured, recycled, recovered, treated, or otherwise processed in these operations.

   Response to Question 3(e): The principal products produced by Olin at the Eames Street facility are identified in the response to Question 3(a). Additional information concerning the products historically manufactured at the Eames St. facility is contained in **Exhibit D, Attachments 1 and 2**.

f. In general terms, list the types of raw materials used in the operations.

   Response to Question 3(f): Information concerning raw materials used in the Wilmington manufacturing operations is contained in **Exhibit D, Attachments 1-3 and 6**.

g. Describe the cleaning and maintenance of the equipment and machinery involved in these operations, including but not limited to:

   i. the types of materials used to clean/maintain this equipment/machinery; and
   ii. the monthly or annual quantity of each material used.

   Response to Question 3(g): Safety Kleen provided cleaning services to the Wilmington facility over some unknown period of time during the period being investigated; Safety Kleen provided solvent to perform the cleaning and removed the spent solvent from the facility. Maintenance personnel cleaned process equipment by wiping with rags. Large process equipment, such as a reactor, was cleaned with soap and water, which was then discharged to the on-site waste water treatment facility. There was apparently a one-time use of diesel fuel to clean out one of the reactors at some time. It also appears that acetone may have been used for cleaning purposes in the laboratory.

h. Describe the methods used to clean up spills of liquid or solid material during operations, including but not limited to:

   i. The type of materials spilled in operations
   ii. The materials used to clean up these spills
   iii. The methods used to clean up those spills

   Response to Question 3(h): In the course of ongoing remedial work at the Wilmington facility extensive documentation has been obtained or developed regarding historical spills at the 51 Eames Street property. A number of those documents were provided to EPA as Exhibits to the Aberjona River 104(e). For EPA's convenience, one such summary of historical spills is attached hereto as **Exhibit E**. Additional information concerning historical spills at the property is contained in **Exhibit D, Attachments 2 and 5.**

   During Olin's ownership of the facility spills were cleaned up in accordance with written policies. The method used depended on a number of factors, including the material spilled and the volume of the spill. Documents describing the cleanup of spills are included in **Exhibit F and G**.

i. Provide a schematic diagram or flow chart that fully describes and/or illustrates the operations at the site.

   Response to 3(i): Schematic diagrams describing manufacturing operations performed at the facility are provided in **Exhibit D, Attachment 1**.

j. Identify all former or current employees and all other persons who have any knowledge of or information about the subject matter of any of the foregoing questions or who had any contact with Whitney Barrel Company.

0041-0023

Response to Question 3(j): Given the broad scope of this question, Olin believes that virtually all of its employees may have some knowledge regarding the subject matter of the foregoing questions. Notwithstanding the foregoing, Olin believes that the individuals most knowledgeable about these matters are:

- Steve Morrow, Principal Environmental Specialist, Olin Corporation, Box 248, Charleston TN 37308, 423/336-4500;

- Don Cameron, On-Site Manager, Olin Corporation (retired)

Olin has been unable to identify any present or former employee known to have had contact with Whitney Barrel. Olin refers to its response to Question 7(a).

4. **Respondent's Wastes and Waste Streams (including By-Products)**

Note: All questions in this section refer to the period being investigated (1950-1985) unless otherwise indicated.

General Response to Question 4: As indicated in its Preliminary Statement above, Olin's response to the following question and its subparts is limited to Olin's manufacturing operations at 51 Eames Street in Wilmington, Massachusetts during the period being investigated.

a. Complete the enclosed "Waste Survey" checking each substance present in Respondent's wastes or by-products and providing all requested information for each such substance that is checked.

Response to Question 4(a): The wastes generated at the Wilmington Facility do not correspond to the categories listed under "Substance" in ENCLOSURE E, "WASTE SURVEY." Information concerning waste types, waste volumes and disposal practices at the 51 Eames Street facility is contained in **Exhibit D, Attachments 1, 2, 5 and 6.** Additional information concerning the handling and disposal of wastes is contained in **Exhibits F - K**.

b. For each type of waste (including by-products) from Respondent's operations, including but not limited to all liquids, sludges, and solids, provide the following information:

i. its physical state
ii. its name and chemical composition

Response to Question 4(b)(i)-4(b)(ii): See response to 4(a) and documents referred to therein.

0041-0024

iii. the approximate monthly and annual volumes of each type of waste (using such measurements as gallons, cubic yards, pounds, etc.)

Response to Question 4(b)(iii): See response to 4(a) and documents to referred to therein.

iv. the dates (beginning & ending) during which each type of waste was produced by Respondent's operations.

Response to Question 4(b)(iv): See **Exhibit D, Attachments 1 and 2.**

c. Describe how each type of waste was collected and stored at Respondent's operation prior to disposal/recycling/sale/transport, including:

i. the type of container (e.g. 55 gal. Drum, tank, dumpster, etc.)
ii. the colors of the containers
iii. any distinctive stripes or other markings on those containers
iv. any labels or writing on those containers (including the content of those labels)
v. whether those containers were new or used
vi. where each type of waste was collected/stored
vii. if those containers were used, a description of the prior use of the containers.

Response to Question 4(c)(i)-4(c)(vii): General plant refuse was deposited in dumpsters located in the plant. Product waste was either recycled to the manufacturing process or stored in drums, labeled as to date, weight, waste material contained in the drum, and generating department, and stored in designated areas. Acid waste streams from manufacturing operations were piped to an on-site treatment facility where they were neutralized. Any spill clean-up materials were stored in steel drums and labeled as to date, weight, waste material contained in the drum, and generating department and stored in designated areas. Waste materials which were determined to be hazardous were stored in the designated hazardous waste storage area. Hazardous wastes being shipped off site were marked with DOT Shipping Names and Placards. Additional information regarding waste collection and storage is contained in **Exhibits G and H**.

On information and belief, drums used for storage of waste may have been used or reconditioned. Olin has no information about the prior use of such drums.

When Olin acquired the plant in 1980, some 193 barrels of material had been left on site by the former owners. No such barrels were shipped to Whitney Barrel.

d. Identify (see Definitions) the person(s) who was responsible for collecting and managing each type of waste.

Response to Question 4(d): Olin refers to **Exhibits F and G**.

e. For each location, identify and provide copies of all surveys or studies conducted between 1950 and 1985 about its waste management practices including but not limited to disposal, treatment, storage, recycling, or sale of wastes.

Response to Question 4(e): Olin refers to the documents contained in **Exhibits D and E**. Additional responsive documents are contained in **Exhibit H**.

f. Identify all former or current employees and all other persons who have any knowledge of or information about the subject matter of any of the foregoing questions or who had contact with Whitney Barrel Company.

Response to Question 4(f): See responses to Questions 3(j) and 4(d).

5. Respondent's Disposal/Treatment/Storage/Recycling/Sale of Waste (including By-Products)

Note: All questions in this section refer to the period being investigated (1950-1985) unless otherwise indicated.

Also Note: Your response to questions in this section must refer to all locations to which Respondent sent its wastes.

General Response to Question 5: As indicated in its Preliminary Statement above, Olin's response to the following question and its subparts is limited to Olin's manufacturing operations at 51 Eames Street in Wilmington, Massachusetts during the period being investigated.

a. Identify (see Definitions) all individuals who currently have and those who have had responsibility for the disposal, treatment, storage, recycling, or sale of Respondent's wastes, including, but not limited to barrels or empty barrels

- Response to Question 5(a): Steve Morrow has current responsibility for the disposal, treatment, storage, recycling or sale of wastes at the Wilmington facility. Mr. Morrow's identifying information is provided in the response to Question 3(j). With respect to operations during the period being investigated, Olin refers to its answers to Questions 3(j) and 4(d) and the documents referred to therein for information concerning facility-level responsibilities. During the relevant period, Olin provided corporate oversight of facility environmental compliance.

b. Identify (see Definitions) all individuals who currently have and those who have had knowledge of the disposal, treatment, storage, recycling, or sale of Respondent's wastes, including, but not limited to barrels or empty barrels.

Response to Question 5(b): Given the extremely broad scope of this question, Olin believes that virtually all of its employees may have some knowledge regarding the subjects referred to therein. Notwithstanding the foregoing, Olin believes that the individuals likely to be most knowledgeable about these matters are those identified in the response to Question 5(a).

c. Identify (see Definitions) all individuals who currently have and those who have had responsibility for Respondent's environmental matters.

Response to Question 5(c): See response to 5(a).

d. For the previous three responses, also provide each individual's:

i. job title
ii. duties
iii. dates performing those duties

Response to Question 5(d)(i)-5(d)(iii):

Steve Morrow-Principal Environmental Specialist, responsible for environmental compliance and remediation, September 1986 to Present

Don Cameron-Site Manager, Worked in Maintenance and responsible for the site in addition to the daily operation of the groundwater pump & treat system located on the site, maintenance 1980-1986, site manager 1986-2000 (retirement)

iv. supervisors for those duties

Response to Question d(iv): Mr. Morrow's current supervisor is Tom O'Brien, Manager, Remediation Sites, Olin Corporation, Box 248, Charleston TN 30310. On information and belief, Mr. Cameron's supervisor during the relevant period was Patrick Kane. Mr. Kane is deceased.

v. current position or, if such individual is no longer employed by Respondent, the date of the individual's resignation

Response to Question 5(d)(iv)-5(d)(v): Mr. Morrow is currently employed by Olin. Mr. Cameron retired in 2000.

vi. the nature of the information possessed by such individuals concerning Respondent's waste management

Response to Question 5(d)(vi):

- Steve Morrow - General information concerning generation and disposal of wastes and environmental compliance;
- Don Cameron - Facility operations and environmental compliance from 1980 to 1985.

e. Describe the containers used to take each type of waste from Respondent's operation, including but not limited to:

i. the type of container (e.g. 55 gal drum, tank, dumpster, etc.)
ii. the colors of the containers
iii. any distinctive stripes or other markings on those containers
iv. any labels or writing on those containers (including the content of those labels)
v. whether those containers were new or used
vi. if those containers were used, a description of the prior use of the containers

Response to Question 5(e)(i)-(vi): See response to Question 4(c). Olin also refers to the documents provided in response to Questions 5(g) and 5(o).

f. For each type of waste describe Respondent's contracts, agreements, or other arrangements for its disposal, treatment, or recycling.

Response to Question 5(f): Between its acquisition of the facility in September 1980 and the end of the period being investigated (1985), Olin entered into written contracts with a number of Licensed Waste Disposal contractors for pickup and disposal of the various wastes generated at the 51 Eames Street facility. Copies of these contracts and related documents are provided in **Exhibit I**.

g. Provide copies of such contracts and other documents reflecting such agreements or arrangements.

Response to Question 5(g): See **Exhibit I.**

h. State whether Respondent sent each type of its waste, including barrels and empty barrels, for disposal, treatment, or recycling.

Response to Question 5(h): See response to Question 4(c) and documents referred to therein. As previously noted, certain process materials were recycled into the manufacturing process. Acid waste streams were neutralized on-site. Calcium sulfate sludge resulting from the neutralization of acid waste streams was periodically removed and disposed of in an on-site calcium sulfate landfill. Treated liquid waste was discharged to the MDC sewer system pursuant to an Industrial

Wastewater permit. Empty drums were sent off-site for crushing or shredding. During Olin's tenure, all drums were required by RCRA regulations to be thoroughly cleaned before being transported offsite. See also response to 5(e).

i. Identify (see Definitions) all entities and individuals who picked up waste, including barrels, from Respondent or who otherwise transported the waste away from Respondent's operations (these companies and individuals shall be call "Waste Carriers" for purposes of this information request).

Response to question 5(i): On information and belief, the following entities picked up waste or were Waste Carriers from the Wilmington site during Olin's operation of the facility:

Clean Harbors, Inc.
P.O. Box 193
100 Joseph Street
Kingston MA 02364
617-585-5111

NEWCO Waste Systems Inc.
4626 Royal Avenue
Niagara Falls, NY 14303
716-285-6929

Tonawanda Tank Transport, Inc.
1140 Military Road
Buffalo, NY 14217
716-434-1490

D. & J. Transportation Specialists Inc.
107 7th Street
N. Liverpool, NY 13088
315-475-5989

Rollins Environmental Services
(NJ) Inc.
P.O. Box 221
Bridgeport NJ 08014
609-467-3100

Frontier Chemical Waste
4626 Royal Avenue
Niagara Falls, NY

Price Trucking
P.O. Box 63
Park Street Station South
Buffalo, NY
800-828-1043

Recycling Industries Inc.
385 Quincy Avenue
Braintree, MA
617-808-0612

JETLINE Services, Inc
P. O. Box 180
Stoughton, MA 02071
617-843-2829

Edward C. Whitney & Sons, Inc.
888 Woburn Street
Wilmington MA 01887
978-658-8151

Buffalo Fuel Corporation
2445 Alan Avenue
Niagara Falls, NY 14303
716-773-1921.

SCA Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

0041-0029

j. If Respondent transported any of its wastes away from its operations, please so indicate and answer all questions related to "Waste Carriers" with reference to Respondent's actions.

Response to Question 5(j): So far as Olin is aware, Olin did not transport any of its waste away from its operation.

k. For each type of waste specify which Waste Carrier picked it up.

Response to Question 5(k): Olin refers to the documents contained in **Exhibits I and J**.

l. For each type of waste, state how frequently each Waste Carrier picked up such waste.

Response to Question 5(l): Olin refers to the documents contained in **Exhibits I and J**.

m. For each type of waste state the volume picked up by each Waste Carrier (per week, month, or year)

Response to Question 5(m): See **Exhibits I and J**. As previously noted in the response to Question 4(c), the prior owner of the 51 Eames Street facility left behind some 193 barrels of material when it sold the facility to Olin. These materials were sent offsite between 1981 and 1982 by a number of licensed Waste Carriers. Additional information on the volumes of waste that were generated from manufacturing operations is contained in **Exhibit D, Attachment 1**.

n. For each type of waste state the dates (beginning & ending) such waste was picked up by each Waste Carrier.

Response to Question 5(n): Olin refers to the documents contained in **Exhibits I and J**.

o. Provide copies of all documents containing information responsive to the previous seven questions.

Response to Question 5(o): See **Exhibits I and J**. As noted in the Preliminary Statement, Olin understands that EPA does not require cumulative or duplicative information for offsite transport of materials for recycling or disposal at locations other than Whitney Barrel.

p. Identify (see Definitions) all of each Waste Carrier's employees who collected Respondent's wastes and waste carriers.

Response to Question 5(p): Olin refers to the documents contained in **Exhibits I and J**.

q. Indicate the ultimate disposal/recycling/treatment location for each type of waste.

Response to Question 5(q): Olin refers to **Exhibits I and J** and the response to Question 5(h). After a diligent review of company records, Olin has identified no documents or

information indicating that Olin sent any waste material to Whitney Barrel. Empty, rinsed barrels were sent to Edward C. Whitney & Son, Wilmington, Massachusetts, for disposal.

r. Provide copies of all documents indicating the ultimate disposal/recycling/treatment location for each type of waste.

Response to Question 5(r): Olin refers to **Exhibits I, J** and **Exhibit D, Attachments 1-3**.

s. Describe how Respondent managed pickups of each waste, including but not limited to:

i. the method for inventorying each type of waste

Response to Question 5(s)(i): General information regarding the management of waste is provided in the documents attached as **Exhibit G and H**. Hazardous wastes were also managed in accordance with RCRA regulations governing inspections and holding times.

ii. the method for requesting each type of waste to be picked up

Response to Question 5(s)(ii): Olin refers to the documents attached as **Exhibit G, I and J**.

iii. the identity of (see Definitions) the waste carrier employee/agent contacted for pickup of each type of waste

Response to Question 5(s)(iii): Olin refers to the documents attached as **Exhibits I and J**.

iv. the amount paid or the rate paid for the pickup of each type of waste

Response to Question 5(s)(iv): Olin refers to the documents attached as **Exhibits I and J**.

v. the identity of (see Definitions) Respondent's employee who paid the bills

Response to Question 5(s)(v): On information and belief Rick Guiliani was an Accounting Manager during the relevant period and authorized payment to Waste Carriers. Mr. Guiliani is deceased..

vi. the identity of (see Definitions) the individual (name or title) and company to whom Respondent sent the payment for pickup of each type of waste.

Response to Question 5(s)(vi): Olin refers to the documents attached as **Exhibits I and J**.

t. Identify (see Definitions) the individual or organization (i.e. the respondent, the Waste Carrier, or, if neither, identify such other person) who selected the location where each of the Respondent's wastes were taken.

Response to Question 5(t): Decisions regarding the disposal of plant trash during the relevant period were made at the facility level. It is believed that Olin's Environmental Affairs Department participated in decisions regarding the selection of waste haulers and/or disposal locations for hazardous materials for some period of time between 1980 and 1985.

u. State the basis for and provide any documents supporting the answer to the previous question.

Response to Question 5(u): The foregoing response is based on general corporate knowledge regarding practices during the relevant period. Olin has been unable to identify any documents responsive to this question.

v. Identify all former or current employees and all other persons who have any knowledge of or information about the subject matter of any of the foregoing questions.

Response to Question 5(v): Olin refers to its responses to Questions 5(a) - 5(c).

6. Respondent's Environmental Reporting:

Note: All questions in this section refer to the period being investigated (1950-1985).

General Response to Question 6: As indicated in its Preliminary Statement above, Olin's response to the following question and its subparts is limited to Olin's manufacturing operations at 51 Eames Street in Wilmington, Massachusetts during the period being investigated.

a. Provide all Resource Conservation and Recovery Act (RCRA) Identification Numbers issued to Respondent by EPA or a state for Respondent's operations.

Response to Question 6(a):

RCRA Identification number is MAD0001403104
State of Massachusetts Release Tracking number is RTN-0431
NPDES Identification number is MA0005304

b. Identify (see Definitions) all federal offices to which Respondent has sent or filed hazardous substance or hazardous waste information.

Response to Question 6(b):
U. S. Environmental Protection Agency
Water Quality Branch
J. F. Kennedy Federal Building
Boston, MA 0223 (NPDES Permit)

U. S Environmental Protection Agency
Region I
Permits Branch
P.O. Box 8748
Boston, MA 02114 (RCRA)

U. S Environmental Protection Agency
Region I
Sites Notification
Boston, MA 02203 (CERCLA)

U. S. Environmental Protection Agency
Waste Management Division
J. F. Kennedy Federal Building-Room 1903
Boston, MA 02023 (CERCLA 3004U Response)

c. State the years during which such information was sent/filed.

Response to Question 6(c): On information and belief, Olin filed reports on behalf of the Eames Street facility in each year of the relevant period during which it owned the facility (1980-1985).

d. Identify (see Definitions) all state offices to which Respondent has sent or filed hazardous substance or hazardous waste information.

Response to Question 6(d):

The Commonwealth of Massachusetts
Division of Water Pollution control
110 Tremont Street
Boston, MA 02108 (NPDES)

Air Quality Control Section
Department of Environmental Quality Engineering
Northeast Region
323 New Boston Street
Woburn, MA 01801 (Air Permit)

Division of Hazardous Waste
Department of Environmental Quality Engineering
One Winter Street
Boston, MA 02108 (Hazardous Waste Permits, Annual Report)

Office of Incident Response
Department of Environmental Quality Engineering
One Winter Street, 5th Floor
Boston, MA 02108 (Contingency Plan)

Sewerage Division
Metropolitan District Commission
20 Somerset Street
Boston, MA 02108 (Discharge to Sewer)

d. State the years during which such information was sent/filed.

Response to Question 6(e): On information and belief, Olin filed reports on behalf of the Eames Street facility as required in each year of the relevant period during which it owned the facility (1980-1985).

e. List all federal and state environmental laws and regulations under which Respondent has reported to federal or state governments, including but not limited to: Toxic Substances Control Act, 15 U.S.C §§2061 et seq., (TSCA); Emergency Planning and Community Right-to-Know Act, 42 U.S.C §§ 1101 et seq., (EPCRA); and the Clean Water Act (theWater Pollution Prevention and Control Act), 33 U.S.C. §§1251 et seq. and equivalent state law.

Response to Question 6(e):

On information and belief, Olin reported to federal and state governments under the following statutes and regulations, among others:

CERCLA, 42 U.S.C. § 103
Clean Air Act, 42 U.S.C. § 7401 et seq.
Clean Water Act, 33 U.S.C. §§ 1251 et.seq.; 40 CFR §§ 122, 124 (NPDES program)
Resource Conservation and Recovery Act ("RCRA"); 40 CFR §§ 122.22(a)(1)
M.G.L. c. 21, § 26 et seq. (Clean Waters Act)
M.G.L. c. 21C (Hazardous Waste Management Act)
M.G.L. c. 111F (Hazardous Substances Disclosure)

7. **Information Concerning Respondent's Association with the Whitney Barrel Company**
Note: All questions in this section refer to the period being investigated (1950-1985).

General Response to Question 7: As indicated in its Preliminary Statement above, Olin's response to the following question and its subparts is limited to Olin's manufacturing operations at 51 Eames Street in Wilmington, Massachusetts during the period being investigated.

a. Please describe Respondent's business association with the Whitney Barrel Company.

Response to Question 7(a): Based on the documents and information reviewed by Olin in preparing this response, the sole business association between Olin's Eames Street facility and the Whitney Barrel Company in Woburn, Massachusetts consisted of a one-time purchase of two barrels in December 1982.

b. Did your association with the Whitney Barrel Company involve the buying of drums or other size/type of containers? Unless your answer is an absolute "NO", please explain. Include but do not limit your response to:

i. the dates of each pickup and delivery
ii. the type(s) of containers
iii. the size(s) of the containers

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iv. the condition of each container
v. the contents (including but not limited to empty barrel residues) of each container including

1. the name of each material
2. the chemical composition of each material
3. the physical state of each material (e.g., solid, sludge, liquid)
4. the volume of each material

vi. please include all documentation relating to these transactions

Response to Question 7(b): See Response to 7(a). Based on available company records, Olin purchased two 55-gallon 316 steel drums, open head. The documents do not indicate the contents of the drums purchased and it is believed they were new, empty drums. Documents relating to this transaction are included as **Exhibit K**

.

c. Did your association with the Whitney Barrel Company involve the shipping, transport or selling of drums or other size/type of containers? Unless your answer is an absolute "NO", please explain. Include but do not limit response to:

i. the dates of each pickup and delivery
ii. the type(s) of containers
iii. the size(s) of the containers
iv. the condition of each container
v. the contents (including but not limited to empty barrel residues) of each container including

1. the name of each material
2. the chemical composition of each material
3. the physical state of each material (e.g., solid, sludge, liquid)
4. the volume of each material

vi. please include all documentation relating to these transactions.

Response to Question 7(c): Based on Olin's review of available company documents and its discussions with former employees, Olin believes the answer to Question 7(c) is "No."

d. Did your association with the Whitney Barrel Company involve the cleaning and/or reconditioning of drums or other size/type of containers? Unless your answer is an absolute "NO" please explain. Include but do not limit response to:

i. the dates of each pickup and delivery
ii. the type(s) of containers
iii. the size(s) of the containers
iv. the condition of each container
v. the contents (including but not limited to empty barrel residues) of each contain including

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1. the name of each material
2. the chemical composition of each material
3. the physical state of each material (e.g., solid, sludge, liquid)
4. the volume of each material

vi. please include all documentation relating to these transactions.

Response to Question 7(d): Based on Olin's review of available company documents and its discussions with former employees, Olin believes the answer to Question 7(d) is "No."

e. Did the Whitney Barrel Company ever perform any other service for you or your company? Unless an absolute "NO", please explain. Include but do not limit your response to:

i. the type of service(s)
ii. the frequency of the service(s)
iii. the date(s) of service(s)
iv. please include any documentation relating to these transactions

Response to Question 7(e): Based on Olin's review of available company documents and its discussions with former employees, Olin believes the answer to Question 7(e) is "No."

f. Did Respondent ever pick up materials from other parties which were taken directly or indirectly to the Whitney Barrel Company (to be referred to as "customers" for purposes of this Information request)? Unless your answer is an absolute "NO", please explain.

Response to Question 7(f): Based on Olin's review of available company documents and its discussions with former employees, Olin believes the answer to Question 7(f) is "No."

g. Identify (see Definitions) all persons and entities from whom Respondent picked up materials which were taken directly or indirectly to the Whitney Barrel Company.

Response to Question 7(g): See response to Question 7(f).

h. In addition to providing a list that identifies all such customers, provide for each pickup and delivery of materials to the Whitney Barrel Company:

i. the dates of each pickup and delivery
ii. the type of container(s)
iii. the size of container(s)
iv. the condition of each container(s)
v. for each customer's materials taken to the Whitney Barrel Company describe:

1. the nature of each material
2. the chemical composition of each material
3. the physical state of each material (e.g., solid, liquid)
4. the volume of each material

vi. please include all documentation relating to your pickup and delivery of materials to the Whitney Barrel Company

Response to Question 7(h): See response to Question 7(f).

i. Identify (see Definitions) all former or current employees and all other persons who have any knowledge of or information about the subject matter of any of the foregoing questions or who had contact with Whitney Barrel Company.

Response to Question 7(i): Olin has been unable to identify any individual with knowledge regarding contacts with Whitney Barrel Company.

8. Information About Others

a. If you have information concerning the operation of the Site or the source, content or quantity of materials placed/disposed at the Site which is not included in the information you have already provided, provide all such information.

Response to Question 8(a): Olin has identified no other information concerning the operation if the Whitney Barrel Site or the source, content or quantity of materials disposed of at the Whitney Barrel Site.

b. If not already included in your response, if you have reason to believe that there may be persons, including persons currently or formerly employed by Respondent, who are able to provide a more detailed or complete response to any of these questions or who may be able to provide additional responsive documents, identify such persons and the additional information or documents that they may have.

Response to Questions 8(b): Olin refers to **Exhibit B**, which identifies the former owners and operators of the Site. Olin notes that, in the course of litigation it brought against those former owners and operators, the parties exchanged during discovery substantial volumes of documents and deposition testimony relating to historical operations at the Site. Olin has re-examined materials produced by parties in litigation as part of its ongoing Chapter 21E assessment activities. Olin is not aware of any individual with information that would materially change any of the foregoing responses to questions in this Request.

c. If not already provided, identify all persons, including Respondent's current and former employees, who have knowledge or information about the generation, use, purchase, treatment, storage, disposal, placement or other handling of materials at, or transportation of materials to, the Site.

Response to Question 8(c): See response to Question 7(i).

9. Compliance with This Request

a. Describe all sources reviewed or consulted in responding to this request, including but not limited to:

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i. the names of all individuals consulted

ii. the current job title and job description of each individual consulted
iii. the job title and job description during the period being investigated of each individual consulted
iv. whether each individual consulted is a current or past employee of Respondent

Response to Question 9(a)(i.-iv): Individuals consulted in responding to this request include but are not limited to

- Steve Morrow, Principal Environmental Specialist (1986-present), Olin Corporation, Box 248, Charleston TN 37308, 423/336-4500;
- Allan Peirce, On-Site Manager (1996-present), Olin Corporation, 51 Eames Street, Wilmington, MA 01887;
- Don Cameron (retired 2000), maintenance (1980-86), On-Site Manager (1986-2000), Olin Corporation (51 Eames Street facility),
- Don Knight (former employee), Treatment Plant Operator during period being investigated, Olin Corporation (51 Eames Street facility),
- June Plumer (former employee), Purchasing Agent during period being investigated, Olin Corporation (51 Eames Street facility),
- Terry Printich (former employee), Administrative Assistant during period being investigated, Olin Corporation (51 Eames Street facility),
- Tom O'Brien, Manager, Remediation Sites, Olin Corporation, Box 248, Charleston TN, 423/336-4500;
- Lorraine Miller, Principal Environmental Specialist (present, employed as a chemist by Olin between 1973 and 1986), Olin Corporation, Box 248, Charleston TN, 423/336-4500.

v. the names of all divisions or offices of Respondent for which records were reviewed
vi. the nature of all documents reviewed
vii. the locations where those documents reviewed were kept prior to review
viii. the location where those documents reviewed are currently kept

Response to Question 9(a)(v)-(viii): As discussed in the preliminary statement, Olin reviewed documents and information concerning the 51 Eames Street site in Wilmington, Massachusetts. Sources reviewed or consulted in responding to this request include but are not limited to records in Olin's corporate records archives, its Law Department, and its Environmental Remediation Group records center. The nature of the documents reviewed includes but was not limited to contracts, waste disposal records, and facility documents. Prior to review, these documents were stored in commercial records storage facilities. The reviewed records are currently either in the custody of Olin Corporation or have been returned to commercial records storage.

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CERTIFICATION OF RESPONSES TO REQUEST

This response is not made on the basis of personal knowledge unless otherwise indicated and was prepared by or with the assistance of agents, representatives, and employees of Olin Corporation or others believed to have relevant information, and on the advice of counsel, which advice was relied upon herein. The answers set forth herein, subject to inadvertent or undiscovered errors or omissions, are based on and therefore necessarily limited by the records and information still in existence, currently recollected, thus far discovered in the course of the preparation of this response, and currently available to the undersigned. Olin Corporation reserves the right to supplement this response in the event that it locates additional information which makes such supplementation appropriate.

Curt M. Richards

Curt M. Richards
V.P. Environment, Health & Safety

EXHIBIT A

About Olin

History

Olin
501 Merritt Seven
Norwalk, CT 06856-4500
(203) 750-3000

Olin's History

The "Roaring Nineties"

As the 20th Century approached, the United States began to challenge the nations of Europe as the most powerful industrial country on earth. The trusts of millionaire magnates -- Vanderbilt, Carnegie, Morgan -- dominated that Gilded Age in the 1890s, but many small businesses also took root in the fertile soil of an expanding economy.

Two of those fledgling companies were Olin Industries and Mathieson Chemical Corporation. Each was founded in 1892 in separate parts of the country by entrepreneurs who never knew one another. And each laid part of the foundation of today's Olin Corporation, a leading North American producer of copper alloys and other metals, ammunition, and chlorine and caustic soda.

Origin of Olin Industries

Franklin W. Olin

In 1892, Franklin W. Olin, a Vermont-born engineer who was educated at Cornell University, founded the Equitable Powder Company in East Alton, Illinois. A predecessor of Olin Industries, Equitable Powder supplied blasting powder to midwestern coal fields. The powder company soon expanded into small arms ammunition, and the Western Cartridge Company was formed in 1898.

The Western Cartridge Company

During the First World War, Western built a brass mill to supply the great demand for brass for military cartridges. When the war ended, Western turned to "tailor-made" brass and other copper alloys to absorb excess production capacity. Today, Olin Brass continues to produce a wide range of copper and copper-based alloy sheet, strip, tube and fabricated products.

In 1931, Western completed its integration into small arms and ammunition with its purchase of the legendary Winchester Repeating Arms Co., which had been founded in New Haven, Conn., in 1866. Winchester also greatly expanded production during World War I, but to absorb the excess capacity and pay down debt it made a disastrous foray into manufacturing and selling hardware goods, from roller skates and refrigerators to batteries. This failed experiment eventually drove Winchester into receivership and led to its sale to the Olins and Western Cartridge in 1931. The Olins quickly ended Winchester's foray into the hardware field, paring it down to its core competencies in arms and ammunition.

Winchester-Western made major contributions to Allied Forces in World War II by manufacturing 15 billion rounds of ammunition and also developing the U.S. carbine and M-1 rifle. By the end of the war, Winchester-Western employed 62,000 people, including those at plants operated for the government.

The Mathieson Side of the Olin Enterprise

The Mathieson Alkali Works in Saltville, VA

Mathieson Chemical Corporation had charted an equally impressive path to success since its founding in 1892. At that time, seven U.S. businessmen formed the Mathieson Alkali Works of Saltville, Va., where they built a plant to produce soda ash from local deposits of salt, coal and limestone. Working with them on the plant's design was a young British engineer, Thomas Mathieson. His father, Neil Mathieson, an English chemical manufacturer, sold the U.S. group the rights to a process to produce alkalis in the U.S.

On July 4, 1895, Mathieson shipped its first soda ash from Saltville to eastern U.S. glass, textile and paper industries. A year later, the company began producing the nation's first commercially available bleaching powder, a chlorine product derived by the electrolysis of salt brine. On Thanksgiving Day in 1897, Mathieson started up a plant at Niagara Falls, N.Y., to produce chlor-alkali products. That initial plant, just like Olin's current operations in Niagara Falls, benefited from the Falls' low-cost hydroelectric power. Mathieson's growing expertise in chlor-alkali products eventually led to such products as today's HTH swimming pool and spa sanitizer, one of the leading brands of calcium hypochlorite pool sanitizers in the world.

In 1909, Mathieson began the first commercial production of liquefied chlorine, and in 1923 it built one of the first synthetic ammonia plants. During World War II, chlorine and other alkali chemicals were used for water purification and sanitation of military medical equipment in the field. In 1949, Mathieson began a strategy of expansion into industrial and agricultural chemicals when it became a producer of sulfuric acid, fertilizers and pesticides. In 1950 it built a plant in Brandenburg, Ky., to process natural gas into organic chemicals. Also, it added a plant in McIntosh, Ala., for chlorine and caustic soda.

Mathieson continued its expansion with its acquisition in 1952 of the pharmaceutical firm E.R. Squibb & Sons. This acquisition was not as far afield as one might think, for the production of medicines requires much the same exacting skills as the production of specialty chemicals. Moreover, chlorine is a vital precursor chemical in 85% of all pharmaceutical products. Squibb also provided Mathieson with a complete international sales organization and overseas production plants, expertise that was vital to growing Mathieson's international presence.

Squibb remained a part of the Olin empire until it was spun off in 1968 as a separate company.

Olin Industries' Post-War Expansion

The various Olin businesses were brought together in 1944 under the new corporate name of Olin Industries, Inc. With the retirement of founder Franklin Olin from active management, his sons John and Spencer went on to guide the company through a remarkable period of expansion. Olin's core products and technologies remained metals and ammunition, but it periodically expanded into related businesses. For example, based on its 50 years of experience in cellulose-based products such as explosives, Olin in 1949 entered the cellophane business. In a related move into cellulose products, Olin in 1951 acquired the properties of Frost Lumber Industries of Louisiana and Arkansas, including 440,000 acres of timberlands. Olin around this time also acquired Ecusta Paper Corporation in Pisgah Forest, N.C., a leading producer of fine papers for everything from cigarettes to the Bible.

In 1952, Olin's interest in powder technology led it to purchase Ramset Fasteners, a producer of powder-actuated building tools (such as nail guns) and fastening systems. As a result of these and other initiatives, Olin Industries in the early 1950s was comprised of businesses in brass and other non-ferrous alloys, arms and ammunition, explosives, cellophane, fine papers, construction fastening systems and forest products.

A Powerful 'Marriage': Olin and Mathieson Merge

By 1954, Olin Industries and Mathieson Chemical had reached equal size ($250 million in annual sales) and each had established a solid record of profitability. The companies merged in August 1954 to form Olin Mathieson Chemical Corporation, moving its corporate headquarters in 1955 to New York City. Taking a cue from its two parent companies, the combined Olin Mathieson continued during the 1950s and 1960s to build on its core technologies and products - now chemicals, metals and ammunition. In 1955, for example, Olin Mathieson entered the field of industrial phosphates with its acquisition of the Blockson Chemical Company in Joliet, Ill.

Post-War Prosperity Fuels Rapid Expansion

Also in 1955, Olin purchased the Brown Paper Mill Company of West Monroe, La., a producer of paper bags and corrugated containers. The acquisition was blended with the Frost Lumber acquisition in 1952 to form the Forest Products Division, later called Olinkraft. In 1956, Olin entered the aluminum business, building on its existing base in non-ferrous metals. A joint venture, Ormet Corporation, owned an aluminum plant in Louisiana and a primary aluminum smelter in Ohio. At one point, Olin even owned a bauxite mine in Africa, using this vital raw material in the production of aluminum.

In the 1960s, Olin entered the urethane chemicals business and began manufacturing

In 1962, Olin built a new plant in Charleston, Tenn., for the production of chlorine and caustic soda and HTH swimming pool sanitizers.

polyols at its complex in Brandenburg, Ky. Olin first made toluene diisocyanate (TDI) at a plant in Ashtabula, Ohio, and later at Lake Charles, La. TDI is used to manufacture polyurethane foams, which in turn are used in furniture cushioning, automotive seats and carpet padding. In 1962, Olin built a new plant in Charleston, Tenn., for the production of chlorine and caustic soda and HTH® swimming pool sanitizers. Later, the plant added a facility for making sodium hydrosulfite, which "helps put the blue in blue jeans" as an agent that aids the dyeing of denim and other fabrics.

The 1960s also saw an expansion into leisure products - a foray into camping equipment by Winchester® and the creation of Olin Skis, which are still being made today by K2 skis under a license arrangement with Olin. In 1969, as an extension of its interests in the forest products field, Olin entered the home-building industry and forged several companies into Olin-American, Inc., which built houses in California, Arizona, Virginia and Maryland. In 1969, Olin also completed moving its corporate and chemicals headquarters to a new 60-acre campus in Stamford, Conn. (This headquarters site was sold in 1995 to GE Capital, when Olin moved its headquarters to leased space in the Merritt 7 complex in Norwalk, Conn.) Finally, in 1969, Olin Mathieson Chemical Corporation simplified its name to Olin Corporation after an advertising campaign urged everyone "to call us by our first name."

A Period of Consolidation...

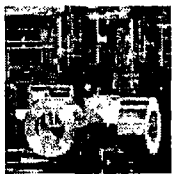
After this prolonged period of expansion, Olin during the 1970s began a period of consolidation that in some regards has continued to this very day. The consolidation was driven by changing business conditions and the realization that the company's resources and expertise were being stretched too far afield from its core competencies in chemicals, metals and ammunition. In 1974, for example, Olin spun off its forest products subsidiary, Olinkraft, and sold its aluminum business as well. By 1984, Olin had sold the last of its housing companies. In 1981, Winchester sold its shotgun and rifle manufacturing operations in New Haven, Conn., to U.S. Repeating Arms Corporation. USRAC continues to make Winchester rifles and shotguns under a licensing agreement, while Winchester makes sporting ammunition at its major plant in East Alton, Ill., and at a smaller shotshell plant in Geelong, Australia.

Olin in 1985 sold its Ecusta Paper and Olin cellophane businesses, followed in 1986 by the divestiture of Ramset Fasteners. The company also exited the camping and ski businesses, selling them to competitors focused exclusively on those challenging markets.

...Followed by Yet Another

During the mid-1980s, flush with the proceeds from its various divestments and with an eye on

Expansion



In the late '80s and early '90s, Olin Brass further strengthened its strategic position with multiple acquisitions

the future, Olin made some selective acquisitions in what it then called "thrust areas," particularly in electronic materials and the ordnance and aerospace industries. In 1984, for example, the company purchased the Philip A. Hunt Chemical Corporation, which brought Olin into the electronic chemicals industry. Olin Brass was already a supplier of high performance copper alloys to that business, and the global boom in sophisticated electronic products (including the first personal computers in 1981) offered the promise of rapid sales growth. Today, this microelectronic chemicals business is one of the flagship businesses within Arch Chemicals, Inc.

Olin has served the aerospace industry with rocket engines, propellants and sophisticated electronic products.

In 1985, Olin entered the aerospace industry (which we had already been serving with hydrazine propellants) by acquiring Rockcor, Inc., of Redmond, Wash. Among other products, its business units manufactured rocket engines for satellites and the Space Shuttle along with sophisticated electronic products for both commercial airliners and military aircraft. In a related move, Olin expanded its role in ordnance products (military ammunition) in 1988 with its acquisition of General Defense Corporation. Olin was already a major producer of medium caliber ammunition and of small caliber ammunition, and General Defense gave it capabilities in the manufacture of large caliber ammunition for tanks.

Despite its forays into diverse markets and industries, Olin did not neglect over the years to strengthen its core businesses in chemicals, metals and ammunition. For example, Olin Brass in 1967 acquired Somers Thin Strip in Waterbury, Conn., a company that takes various metals, including brass created by our mill in East Alton, Ill., and transforms them into everything from the metallic hubs in the center of computer disks to metals for ballpoint pens. In 1988, Olin Brass purchased Bridgeport Brass, whose mill was located in Indianapolis, Ind., greatly expanding Olin Brass's capacity in the U.S. And to capitalize on rapidly growing markets in Asia, Olin Brass teamed up with Yamaha in the late 1980s to form Yamaha-Olin Metals, a joint venture in Japan that creates high performance copper alloys for use by the Asian electronics industry.

In 1991, Olin Brass further strengthened its strategic position with the acquisition of A.J. Oster, a network of seven metals service centers in the U.S. and Puerto Rico. Oster warehouses, cuts, finishes and distributes brass, stainless steel and other metals for small and mid-sized customers throughout North America -- a vital, value-added service that gives Olin Brass another way of excelling at satisfying customer expectations.

0041-0045

During the late 1980s, Olin reached an historic high of $3.01 in earnings per share (readjusted to reflect the two-for-one stock split that occurred in 1996). The company also notched an 18% Return on Equity (ROE), reaching a goal that then Olin Chairman John W. Johnstone, Jr. had set during the mid-1980s.

Paring Down to Core Strengths

The sense of celebration was relatively short-lived, however, because the recession that began the decade of the 1990s had a severe impact on Olin's earnings. The recessionary environment, coupled with fierce and growing foreign competition, revealed that Olin was spread too thinly across too many businesses and product lines. From 1991 through 1995, Olin sold or shut down 18 under-performing and non-strategic businesses and product lines. These actions generated $180 million in net proceeds, but the benefits of our streamlining program were largely obscured by the lingering recessionary environment.

In 1995, the company began assembling a new leadership team after then-Chairman John Johnstone announced his impending retirement. (He was replaced as Chairman, President and CEO by Donald W. Griffin, who remains in these posts as Olin approaches the year 2000.) Two things were immediately clear: First, that despite our efforts to streamline the company, we still needed greater focus. Second, we needed a more comprehensive way of measuring and motivating the performance of Olin's diverse businesses.

Raising the Performance Bar

Given all this, Olin turned to the Economic Value Added methodology, known more familiarly as EVA®. In short, EVA is a powerful business and financial management tool -- one that measures whether one's businesses are generating returns that meet or exceed their total cost of capital. At companies as diverse as Coca-Cola and CSX Railroad, long-term increases in EVA have been strongly correlated with increases in overall stock price and value. To enhance the power of our new EVA methodology, we have strongly linked executive compensation to EVA performance. This linkage, our new leadership team felt, was a critical way for us to raise the performance bar at Olin in a meaningful way.

After adopting EVA, we intensively reviewed our businesses, their prospects and the likelihood that they could generate positive EVA over the course of the business cycle. We also worked closely with investment bankers, Wall Street analysts and others to glean their best ideas about how Olin could accelerate our quest to consistently create superior shareholder value. In October of 1996, Olin announced a series of strategic initiatives that were designed to create a stronger, more focused and more valuable company. To begin with, Olin spun off to shareholders our former Ordnance and

Aerospace divisions as Primex Technologies, Inc.

We also announced the sale of our TDI and ADI isocyanates businesses to Arco Chemical for $565 million in cash. While Olin was a leading producer of TDI in North America, we neither had a presence in important complementary products such as MDI, nor a strong propylene oxide position for flexible polyols. We also sold our surfactants businesses at our chemicals' complex in Brandenburg, Ky. to BASF and Pilot Chemical Company.

Olin's joint venture "sunbelt" facility in McIntosh, Alabama.

Olin used the proceeds from the TDI sale and other divestments to repurchase Olin common stock, to pay down debt, and to purchase DuPont's 50% share in Niachlor -- a joint venture chlor alkali plant in Niagara Falls, N.Y. The company also invested in a new chlor alkali plant in McIntosh, Alabama. The new Sunbelt plant was built for $200 million as a joint venture between Olin and Geon, a major Olin customer in the polyvinyl chloride (PVC) market. Geon takes 100% of the plant's chlorine for its use in making PVC resins, while Olin in turn markets the plant's high-purity caustic soda.

A Tale of Two Companies

Olin's former microelectronic chemicals business is one of the flagship businesses within Arch Chemicals, Inc.

Once these strategic actions were completed, Olin had what amounted to two different sets of businesses with entirely different dynamics. On the one hand, the company's specialty chemicals businesses were driven by the need to supply customers with tailored chemicals and technology and a high level of technical customer support. On the other hand, Olin's more traditional basic materials businesses competed more on price and sold into more mature, slower growth markets.

In mid-1998, Olin announced that it would spin off its specialty chemical businesses as a separate, publicly traded company. The purpose of the spin off was to free each of the new companies -- Olin and the spun off company -- to focus exclusively on growing its own businesses and competitive advantages. On February 8, 1999, Olin spun off its specialty chemical businesses as Arch Chemicals, Inc. Around that time, every Olin stockholder received one share of Arch Chemicals stock for every two shares of Olin stock held.

Olin

Proud Heritage ... Promising Future

Following the spin off of Arch Chemicals, Olin became a $1.5 billion company that is a leading North American producer of copper alloys and other metals, ammunition, and chlorine and caustic soda. One of the world's best basic materials businesses, the company today is comprised of three divisions -- Olin Brass, Winchester (both of which are headquartered in East Alton, Ill.) and the Chlor Alkali Products Division, which is headquartered in Cleveland,

Tenn.

Olin Brass is the world's leading developer of high performance copper alloys and is the U.S. market share leader in copper and copper alloy strip. Winchester is the world's largest ammunition producer and a leading producer of small caliber ammunition in North America. And Chlor Alkali Products is the largest supplier of chlorine and caustic soda in the eastern United States and the fourth largest nationwide. Today, Olin has approximately 6,700 employees, principally in North America.

We at Olin are excited to be writing a new chapter in our long, proud history. In the months and years ahead, we will fulfill our bright promise by capitalizing on our leadership positions in copper alloys, ammunition and chlorine and caustic soda. We'll do so by intensely focusing on customer needs, aggressively managing costs and pursuing synergistic growth opportunities.

Page Last Updated: 7/13/2001

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0041-0048

EXHIBIT B

Exhibit B

Prior Owners of 51 Eames Street Site

1953-1964

Operations were commenced at the site in 1953 by National Polychemicals, Inc. ("NPI"). NPI operated the site as a separate corporation until 1959 when it became a wholly-owned subsidiary of American Biltrite Rubber Company ("ABR"). Prior to selling the property in 1964, ABR assumed the liabilities of NPI. The successors to ABR are:

American Biltrite, Inc.
57 River Street
Wellesley Hills, MA 02181-2097

The Biltrite Corporation
Two University Office Park
51 Sawyer Road
Waltham, MA 02454-9045

1964-1968

Fisons Ltd. ("Fisons") acquired NPI from ABR in 1964 and ran it first as a subsidiary, until 1966, and then as a subsidiary of a subsidiary, until 1968. During this period, another subsidiary of Fisons, Patco Products, Inc. ("Patco") constructed and operated a manufacturing facility for lawn fertilizer at the Wilmington site. The successors to Fisons/Patco are:

Nor-Am Argo, LLC
340 Changebridge Road
Montville, NJ 07045-1000

Rhone-Poulenc Rorer Limited[1]
RPR House, 50 Kings Hill Avenue
Kings Hill, West Malling
Kent, ME19 4TA, England

[1] Although Rhone-Poulenc acquired Fisons in 1995, it is not clear whether this company is the present successor to the liabilities associated with the 51 Eames Street site, due to a number of intervening and subsequent corporate transformations and acquisitions/sales. Additional information will be provided if it becomes known to Olin.

1968-1980

Stepan Chemical Company ("Stepan") purchased NPI in 1968, operating the facility first as a subsidiary and in 1971 merging NPI into Stepan. Stepan sold the property to Olin in 1980. The successor to Stepan Chemical Company is:

Stepan Company
22 W. Frontage Road
Northfield, IL 60093

Other than as the most recent owner in the chain of ownership of the Wilmington Site, Olin has no relationship with any of the companies discussed above.

EXHIBIT C

WELLS G & H
ENCLOSURE F- CONSTITUENT LIST

Petroleum Hydrocarbons

C11 – C22 Aromatic Hydrocarbons	C9 – C10 Aromatic Hydrocarbons
C19 – C36 Aliphatic Hydrocarbons	C9 – C12 Aliphatic Hydrocarbons
C5 – C8 Aliphatic Hydrocarbons	C9 – C18 Aliphatic Hydrocarbons

PROCESSING OIL X

Herbicides

2,4,5-T (2,4,5-trichlorophenol)	2,4-D (2,4-dichlorophenoxyacetic acid)
2,4,5-TP (Silvex) (alpha-(2,4,5-trichlorophenoxy)propionic acid)	2,4-DB (magnesium bis(2,3-dibromopropyl)phosphate)

Metals

Aluminum	Antimony
Arsenic	Barium
Beryllium	Boron
Cadmium	Calcium
Chromium X	Hexavalent Chromium X
Cobalt	Copper
Cyanide	Iron
Lead	Lithium
Magnesium	Manganese
Mercury	Molybdenum
Nickel	Phosphorus

Potassium	Selenium
Silica	Silver
Sodium	Strontium
Thallium	Tin
Titanium	Vanadium
Zinc	

Polychlorinated Biphenyl (PCB) Aroclors

Aroclor 1016	Aroclor 1221
Aroclor 1232	Aroclor 1242
Aroclor 1248	Aroclor 1254
Aroclor 1260	

Polychlorinated Biphenyl (PCB) Congeners

PCB 105	PCB 114
PCB 118	PCB 123
PCB 126	PCB 156/157
PCB 157	PCB 167
PCB 169	PCB 170
PCB 189	PCB 193/180
PCB 77	PCB 81

Pesticides

4,4'-DDD (1,1-bis(4-chlorophenyl)-2,2-dichloroethane)	4,4'-DDE (2,2-bis(p-chlorophenyl)-1,1-dichloroethylene)
4,4'-DDT (1,1-bis(4-chlorophenyl)-2,2,2-trichloroethane)	Aldrin

a-BHC	b-BHC
d-BHC	g-BHC
BHC	Chlordane
Dieldrin	Endosulfan
Endosulfan I	Endosulfan II
Endosulfan sulfate	Endrin
Endrin aldehyde	Endrin ketone
Heptachlor	Heptachlor epoxide
Methoxychlor	a-Chlordane
g-Chlordane	Toxaphene

Semivolatile Organic Compounds (SVOCs)

1,1'-Biphenyl	Benzo(b)Fluoranthene
1,2,4-Trichlorobenzene	Benzo(g,h,i)perylene
1,2-Dichlorobenzene	Benzo(k)Fluoranthene
1,3-Dichlorobenzene	Benzoic acid
1,4-Dichlorobenzene	Benzyl alcohol
2,2'-Oxybis(1-Chloropropane)	Bis(2-chloroethoxy) methane
2,4,5-Trichlorophenol	Bis(2-chloroethyl) ether
2,4,6-Trichlorophenol	Bis(2-chloroisopropyl) ether
2,4-Dichlorophenol	Bis(2-ethylhexyl) phthalate X
2,4-Dimethylphenol	Butyl benzyl phthalate
2,4-Dinitrophenol	Caprolactam
2,6-Dinitrotoluene	Carbazole
2-Chloronaphthalene	Chrysene
2-Chlorophenol	Cresol
2-Methylnaphthalene	Dibenz(a,h) anthracene
2-Methylphenol	Dibenzofuran

2-Nitroaniline	Diethyl phthalate	
2-Nitrophenol	Dimethyl phthalate	
3,3'-Dichlorobenzidine	Di-n-butyl phthalate	
3-Nitroaniline	Di-n-octyl phthalate	X
4,6-Dinitro-2-methylphenol	Fluoranthene	
4-Bromophenyl phenyl ether	Fluorene	
4-Chloro-3-Methylphenol	Hexachlorobenzene	
4-Chloroaniline	Hexachlorocyclopentadiene	
4-Chlorophenyl phenyl ether	Hexachloroethane	
4-Methylphenol	Indeno(1,2,3-cd)pyrene	
4-Nitroaniline	Isophorone	
4-Nitrophenol	Naphthalene	
Acenaphthene	Nitrobenzene	
Acenaphthylene	N-Nitrosodi-n-propylamine	
Acetophenone	N-Nitrosodiphenylamine	X
Aniline	p-Chlorotoluene	
Anthracene	Pentachlorophenol	
Atrazine	Phenanthrene	
Benzo(a)Anthracene	Phenol	X
Benzo(a)Pyrene	Pyrene	

Volatile Organic Compounds (VOCs)

1,1,1-Trichloroethane	Chloroform
1,1,2,2-Tetrachloroethane	Chloromethane
1,1,2-Trichloro-1,2,2-trifluoroethane	cis-1,2-Dichloroethene
1,1,2-Trichloroethane	cis-1,3-Dichloropropene
1,1-Dichloroethane	Cyclohexane

1,1-Dichloroethene	dibromochloromethane
1,2,3-trichlorobenzene	Dibromomethane
1,2,4-Trichlorobenzene	Dichlorodifluoromethane
1,2,4-Trimethylbenzene	ethanol
1,2-Dibromo-3-chloropropane	Ethyl ether
1,2-dibromoethane	Ethyl methacrylate
1,2-Dichlorobenzene	Ethylbenzene
1,2-Dichloroethane	Ethylenedibromide
1,2-Dichloroethene (total)	Fluorotrichloromethane
1,2-Dichloropropane	freon-114
1,3,5-Trimethylbenzene	freon-12
1,3-Dichlorobenzene	halothane
1,3-Dichloropropane	Hexachlorobutadiene
1,4-Dichlorobenzene	Iodomethane
1,4-Dichlorobutane	isopropyl alcohol
2,2-Dichloropropane	Isopropylbenzene
2-Butanone (MEK)	Methyl acetate
2-Chloroethyl vinyl ether	Methyl cyclohexane
2-Chlorophenol	methyl isobutyl ketone (MIBK)
2-Hexanone	Methyl tert-butyl ether
4-bromofluorobenzene	Methylene chloride
4-chlorotoluene	Naphthalene
4-Methyl-2-pentanone	n-Butylbenzene
Acetone X	n-Propylbenzene
acetonitrile	o-Chlorotoluene
Acrolein	p-Isopropyltoluene
Acrylonitrile	sec-Butylbenzene
Benzaldehyde	Styrene
Benzene	tert-Butylbenzene

Bromobenzene	Tetrachloroethene
Bromochloromethane	Toluene X
Bromodichloromethane	trans-1,2-Dichloroethene
Bromoform	trans-1,3-Dichloropropene
Bromomethane	trans-1,4-Dichloro-2-butene
Carbon disulfide	Trichloroethene
Carbon tetrachloride	Vinyl Acetate
Chlorobenzene	Vinyl chloride
Chlorodibromomethane	Xylenes (total)
Chloroethane	

EXHIBIT D

WILM-MAOC
ENV 4000

Olin

P. O. BOX 248, 1186 LOWER RIVER ROAD, NW, CHARLESTON, TN 37310-0248
(423) 336-4000 FAX: (423) 336-4166

FILE COPY

November 27, 2002

Stephen M. Johnson, Chief
Site Management Section
Bureau of Waste Site Cleanup
Commonwealth of Massachusetts
Department of Environmental Protection
205A Lowell Street
Wilmington, MA 01887

Re: Request for Information; 51 Eames Street; DEP RTN 3-0471

Dear Mr. Johnson:

This responds to the Department's October 18, 2002 Request for Information to Olin concerning raw materials used, products manufactured, and chemical wastes disposed of at the 51 Eames Street facility in Wilmington, Massachusetts.

Before turning to Olin's responses, it is important to register two reservations about the information available to Olin on the subject matter of the requests. The Certification of Submittal attached to this letter is subject to these reservations.

First, the information requested is about events prior to Olin's involvement with the facility, including events that took place more than two decades before Olin's first involvement. Thus, Olin's responses are not based on the personal knowledge of Olin employees. Instead they are based on documents turned over to Olin when Olin purchased the facility, as well as documents, witness interviews and depositions obtained by Olin during a lawsuit against the prior owners

0041-0060

and operators of the facility. While Olin believes that the information provided in this letter and its attachments is generally reliable and complete, Olin can only certify that it is accurate to the extent that those sources were and are accurate.

Second, while Olin believes that its responses fairly represent the body of information available on these subjects, that cannot be guaranteed. Olin has over 900 boxes of documents, containing over two million pages of information, stored in several locations as a result of the lawsuit against prior owners and operators of the facility. The time, manpower and funds have not been available to recover all of those documents from storage and to search through them to supplement Olin's responses to the Commonwealth's requests for information. If the Department wishes to review those documents, Olin will make them available at their storage sites for review and for copying.

Responses to Information Requested

> Request. Please provide a complete list of all raw materials used at the 51 Eames Street facility during operations prior to Olin's ownership at the site. For any raw materials that are comprised of a mixture of chemical compounds, please provide information (such as Material Safety Data Sheets) that identify the components of such materials.

Response. Attachment 1 is a copy of an Appendix to an expert report prepared by Dr. Andy Davis of Geomega, in connection with the lawsuit discussed above. In that Appendix, Dr. Davis presents comprehensive information about six products manufactured at the facility, including information about their raw materials, their chemical composition, and the wastes that were generated as they were manufactured. As explained by Dr. Davis the six products accounted for most of the liquid process wastes that were disposed of to the ground and into the groundwater at

the facility over its life. We understand the Department's purpose in requesting information from Olin is to identify the full range of chemicals that might have contaminated the groundwater below and adjacent to the facility, and the information in Attachment 1, by itself, should go a long way toward meeting that purpose.

Attachment 2 is an environmental disclosure given to Olin by Stepan Chemical Company when Olin bought the facility in 1980. That disclosure lists products then being made and previously made at the facility, as well as the raw materials used and the waste/byproducts generated in the manufacture of those products.

Attachment 3 presents an additional list of raw materials believed by Olin to have been used at the facility during its life. The information in this list was originally assembled by Olin during the lawsuit discussed above for internal purposes, with no expectation that it would subsequently need to be provided to anyone outside the company. Thus, the information was not collected in a way to cross-reference the records or other sources from which it came. Nevertheless, Olin believes the list fairly represents information drawn largely from documents then available to Olin.

> Request. Please provide a complete list of all products manufactured at the 51 Eames Street facility prior to Olin's operations, and the individual chemical components of those products.

Response. Olin again refers the Department to Dr. Davis' study, included in Attachment 1 and to the 1980 environmental disclosure in Attachment 2. Additionally, Attachment 4 contains a list of products believed by Olin to have been manufactured at the 51 Eames Street facility

during operations prior to Olin's ownership at the site, based on a review of technical bulletins published then by the facility's marketing department and provided to customers and potential customers. Olin has had no reason to investigate or determine the individual chemical components of these products.

> Request. Please provide a complete list of all chemical wastes and by-products that are known to have been disposed at the 51 Eames Street facility prior to Olin's operations.

Response. Attachment 1 lists the chemical wastes and by-products that were disposed of at the facility in the manufacture of the six products identified by Dr. Davis as accounting for all but a small amount of the liquid process waste that entered the ground and groundwater at the facility. Attachment 2, the environmental disclosure provided to Olin when it purchased the facility, also identifies chemical wastes associated with specific products. Additionally, Attachment 5, which is a copy of Olin's Supplemental Answers to Interrogatories posed by the Biltrite Corporation during the lawsuit discussed above, lists by location at the facility and time period, known releases of chemical wastes and by-products throughout the operating history of the facility. Further, I refer you to the information Olin submitted by letter to Mr. Pyott on May 16, 2002. The vast majority of potential contaminants of concern listed in Table 1 of that letter were chemicals used in making products both before and after Olin purchased the facility and that list is also thus responsive to your request. The Department should not assume that the chemicals were placed in the environment during the period of Olin's ownership simply because the information about them came from post – 1980 sources. To the extent those contaminants are found at the facility, Olin believes, based on all the evidence available, that, they were most likely disposed of there before Olin arrived on the scene.

Finally, in the interest of fully responding to the Department's requests for information, Olin asked Dr. Davis to go through his facility related records and to identify all chemicals referred to in connection with the facility. Attachment 6 presents the results of Dr. Davis's search.

Please let me know if you have questions regarding the above.

Sincerely,

Thomas P. O'Brien

Thomas P. O'Brien,
Manager Environmental Sites

Attachments

CERTIFICATION OF SUBMITTAL REQUIRED AT 310 CMR 40.0009(1) AND (6)

Re:

REQUEST FOR INFORMATION

I, Thomas P. O'Brien, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this submittal, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the person or entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate or incomplete information.

Date: November 27, 2002

By: _____

ATTACHMENT 1

Appendix B: Product Formulation, Waste Streams, and Production

B-1 Introduction

Manufacturing and production records, as well as the report from Richard Strauss (1999), were used to calculate the amount of process waste that was sent to pits, ponds, and lagoons at the Wilmington property from 1953 to 1986. Products with liquid waste streams that were included in the analyses for this report were Opex, Kempore, hydrazine, Wytox ADP, OBSC/OBSH, and Wiltrol-N (Boynton, 1973; Ecology and Environment, 1980; Environmental Disclosure, 1980; McBrien, 1983c). Nitropore 5PT and phenolic and urea formaldehyde resins were identified in various documents as also producing liquid waste streams. Because Nitropore 5PT was produced only in small quantities (24,000 lb/yr) from 1973 to 1986, first in the pilot plant and later in Plant D-1, it was not included (Environmental Disclosure, 1980; Landry, 1999; McBrien, 1983b). Resins were produced from 1961 to 1967, first in the pilot plant and later in Plant B (Cantwell, 1997; Environmental Disclosure, 1980; Judd, 1997). Documents suggest that the resin waste products, which included only raw materials (phenol and formaldehyde), may have been removed by lime treatment in a trap pit outside Plant B (Environmental Disclosure, 1980; MIC, 1958; NPI, 1954; Riley, 1997a). Because there was no apparent filtering or washing step in the resin manufacturing process that would have generated significant quantities of waste, resins were not considered further in the analyses for this report (Judd, 1997; Riley, 1997a; Wandell, 1997).

The following sections describe the product formulation, waste stream composition, and production levels for Opex, Kempore, hydrazine, Wytox ADP, OBSC/OBSH, and Wiltrol-N. All chemical reactions in this section are taken from Strauss (1999).

B-2 Opex

Opex, also referred to by other names, such as Product A, RPC, 4X, dinitroso-pentamethylenetetramine (DNPT), was produced in Plant A (Figure B-1) from 1953 to 1986 (Cantwell, 1997; Environmental Disclosure, 1980; Judd, 1997; Swanson, 1997).

Opex is a nitrogen-blowing agent used in the manufacture of shoe soles, mechanical goods, insulation, and athletic equipment (Lasman, 1965).

B-2.1 Opex Product Formulation

The raw materials used in the manufacture of Opex at the Wilmington property included hexamethylenetetramine (hexa), sodium nitrite, and dilute hydrochloric acid (HCl). The manufacturing information summarized in this section is taken from Badger (1969), Strauss (1999), and Swanson (1958). To make a batch of Opex ($C_6H_{12}N_4$), solutions of hexa ($C_6H_{12}N_4$) and a slight excess of sodium nitrite ($NaNO_2$) were charged to a reactor with water. A dilute hydrochloric acid (HCl) solution was slowly added with ice to control the temperature of the reaction, which proceeded according to,

$$C_6H_{12}N_4 + 2NaNO_2 + 2HCl \rightarrow C_5H_{10}O_2N_6 + HCHO + 2NaCl + H_2O \quad . \qquad \text{(B-1)}$$

Formaldehyde (HCHO) and sodium chloride (NaCl) were generated as waste products. A portion of the hexa that was not reacted according to equation B-1 was decomposed by hydrochloric acid to ammonium chloride (NH_4Cl) and formaldehyde, i.e.,

$$C_6H_{12}N_4 + 4HCl + 6H_2O \rightarrow 4NH_4Cl + 6HCHO \quad . \qquad \text{(B-2)}$$

A schematic of the general steps in the process is presented in Figure B-2. As the temperature of the mixture cooled, Opex precipitated out of solution and 598 Oil was added to coat the solid. The oily mixture was pumped to a pan filter and washed with water. The solid Opex was retained on the filter, and the water-soluble products in the filtrate were sent to a drain.

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B-2.2 Opex Waste Streams

The composition of the drain liquid included water soluble reaction products (formaldehyde, ammonium chloride, sodium chloride) and unreacted raw materials (sodium nitrite, 598 Oil). In addition, the drain liquid included water from the batch charge, a small amount from ice, and sodium nitrite and hydrochloric acid solutions (Badger 1969; Moorman, 1963; Strauss, 1999; Swanson, 1958). A small loss of water occurred through chemical reaction (equations B-1 and B-2). The oily mixture, that included Opex, was washed and filtered, however, insufficient information was available to calculate this quantity on a batch basis. The filtration water was accounted for indirectly in the calculation of other water streams in the effluent, as discussed in Section B-8.

Figure B-2 illustrates the general steps in the process, with typical quantities of batch reactants and products. The composition of the waste stream is summarized in Table B-1. Opex wastes were sent to Lake Poly from 1953 to 1969, the Acid Pits from 1970 to 1971, and the wastewater treatment plant from 1972 until the plant closure in 1986 (Figure B-1; Badger, 1969; Raytheon, 1970; Riley, 1997a; Willwerth, 1997).

B-2.3 Opex Production

Annual production levels of Opex (Table B-2) were determined from available production records (ABR, 1963; Badger, 1969; NPI Operations Reports, 1965; NPI Operations Reports, 1966; McBrien, 1980b; McBrien, 1983a; McBrien, 1984; NPI Daily Production Summaries for Weeks Ending August to December, 1961; Swanson, 1961). An interpolation between two known values was used for years that information was not available. An interpolation from zero in 1952 to the level of production that was obtained from documents for 1961 was used to determine production from 1953 through 1960. This assumption is consistent with the increase of sales from 1953 to 1958 (ABR Sales Summary, 1959). Production decreased from 1969 to 1984, therefore, the production levels for 1985 and 1986, which were not available, were assumed to be the same as

production levels in 1984. The 1986 production level was scaled down to reflect that production had ceased by September of 1986.

B-3 Kempore

Kempore, also referred to by other names, such as Product K-1, azodicarbonamide or azobisformamide (HDCI), was produced in Plant C-1 (Figure B-1) from 1956 to 1986 (Environmental Disclosure, 1980; Hwozdek, 1997; Judd, 1997). Kempore is a nitrogen-blowing agent used in the manufacture of vinyl-coated upholstery, luggage, garments, handbags, and vinyl flooring (Lasman, 1965).

B-3.1 Kempore Product Formulation

The Kempore manufacturing process was changed several times from 1956 to 1986 (Badger, 1969; D.Y.K., 1974; J.A.M., 1965; McBrien, 1978; Riley, 1964; Riley, 1965; Riley, 1966b; Strauss, 1999; Walker, 1965). The primary changes included the source of hydrazine used as a reactant, and the oxidizer used in the oxidation process. The first source of hydrazine used in the manufacture of Kempore was monohydrazine sulfate (MHS) from 1956 through 1963 (Strauss, 1999). From 1964 through most of 1970, hydrazine was produced in the CCU process at the site, and after that, hydrazine was purchased. Sodium dichromate was used as the oxidizing agent from 1956 until April, 1967, when sodium dichromate was used. The manufacturing information summarized in this section is taken from Badger (1969), NPI Kempore Operating Instructions (1967), NPI Kempore Operating Procedure, McBrien (1978), and Strauss (1999).

B-3.1.1 Sodium Dichromate Oxidation

Hydrazocarbonamide (HDCA, $NH_2CONHNHCONH_2$), an intermediate to Kempore, was produced by reaction of urea (NH_2CONH_2) and MHS ($N_2H_4 \cdot H_2SO_4$) or hydrazine (N_2H_4) in the presence of a sulfuric acid (H_2SO_4) catalyst, i.e.,

$$2NH_2CONH_2 + N_2H_4 \cdot H_2SO_4 \rightarrow NH_2CONHNHCONH_2 + (NH_4)_2SO_4 \quad , \qquad \text{(B-3)}$$

$$2NH_2CONH_2 + N_2H_4 + H_2SO_4 \rightarrow NH_2CONHNHCONH_2 + (NH_4)_2SO_4 \quad . \qquad \text{(B-4)}$$

The HDCA reaction mixture was pumped to a second reactor for oxidation. From 1956 until April 1967, solid sodium dichromate ($Na_2Cr_2O_7 \cdot 2H_2O$) and sulfuric acid were used in the oxidation step, i.e.,

$$NH_2CONHNHCONH_2 + 1/3Na_2Cr_2O_7 \cdot H_2O \; + 1/3H_2SO_4 \rightarrow \qquad \text{(B-5)}$$

$$NH_2CON:NCONH_2 + 1/3Cr_2O_3 + 1/3Na_2SO_4 + 2H_2O.$$

The Kempore ($NH_2CON:NCONH_2$) slurry was filtered and washed free of salts. The combined filtrate and washwater, containing urea, sulfuric acid, chrome oxide (Cr_2O_3), sodium sulfate (Na_2SO_4), and ammonium sulfate ($(NH_4)_2SO_4$) were sent to a drain. The wet cake from the filter press was dried, and the dry cake was ground into various particle sizes for sale. A schematic of the general steps in the process using sodium dichromate is presented in Figure B-3.

B-3.1.2 Sodium Chlorate Oxidation

From April, 1967 to 1986, hydrazine from the CCU process or purchased hydrazine was used in the HDCA step (equation B-4), and sodium chlorate ($NaClO_3$) was used in the oxidation step to produce Kempore, i.e.,

$$NH_2CONHNHCONH_2 + 1/3NaClO_3 + 1/6H_2SO_4 \rightarrow \qquad \text{(B-6)}$$

$$NH_2CON:NCONH_2 + 1/3HCl + 1/6Na_2SO_4 + H_2O.$$

The HDCA slurry was thickened prior to oxidation, generating a filtrate that was sent to a drain. A small amount of bromine, added as sodium bromide (NaBr), was added as a catalyst in the oxidation step, reacting according to,

$$6NaBr + 3Na_2SO_3 + NaClO_3 + 7/2H_2SO_4 \rightarrow 6HBr + HCl + 13/2Na_2SO_4 \quad . \qquad \text{(B-7)}$$

The Kempore slurry was filtered and washed free of salts. The combined filtrate contained urea, sulfuric acid, hydrochloric acid (HCl), sodium sulfate, ammonium sulfate, and hydrogen bromide (HBr). A schematic of the general steps in the process using sodium chlorate is presented in Figure B-4.

B-3.2 Kempore Waste Streams

The drain liquid from 1956 through March of 1967 was composed of the water soluble reaction products chrome oxide, sodium sulfate, and ammonium sulfate, and the unreacted raw materials urea and sulfuric acid (Strauss, 1999). From April, 1967 to 1986, the drain liquid was composed of the water soluble reaction products hydrochloric acid, sodium sulfate, ammonium sulfate, and hydrogen bromide, and the unreacted raw materials urea and sulfuric acid. In addition, the drain liquid included water from the filtration step, batch reactants, and chemical reaction (McBrien, 1978; NPI Kempore Operating Instructions (1967), NPI Kempore Operating Procedure; Strauss, 1999).

Figures B-3 and B-4 illustrate the general steps in the process for the sodium dichromate and sodium chlorate processes, respectively, with typical quantities of batch reactants and products. The composition of the waste stream is summarized in Table B-3 for the sodium dichromate process, and in Table B-4 for the sodium chlorate process. Two numbers are presented for the water added to the HDCA reactor to reflect the difference in water content of the hydrazine source (MHS, CCU hydrazine, and purchased hydrazine) and the batch water added. Liquid wastes were sent to Lake Poly from 1956 to 1957, the East and West Pits from 1958 to 1965, the Acid Pits from 1966 to 1971, and the wastewater treatment plant from 1972 until the plant closure in 1986 (Figure B-1; Badger, 1969; Hwozdek, 1997; Raytheon, 1970; Riley, 1997a; Willwerth, 1997).

B-3.3 Kempore Production

Annual production levels of Kempore (Table B-5) were determined from available production records (ABR, 1963; Badger, 1969; NPI Operations Reports, 1965; NPI

Operations Reports, 1966; McBrien, 1980a; McBrien, 1983a; McBrien, 1984; Production, 1967; NPI Daily Production Summaries for Weeks Ending August to December, 1961; Swanson, 1961). An interpolation between two known values was used for years that information was not available. For 1956 through 1960, an interpolation from zero in 1955 to the level of production identified in documents for 1961 was assumed, which is consistent with the increase in sales from 1953 to 1958 (ABR Sales Summary, 1959). Kempore dispersions (Kempore SD) produced at the property were a mixture of manufactured Kempore with another chemical such as di-octyl phthalate (DOP). It was assumed that in production records, the amount of Kempore reported as a Kempore dispersion was also counted as Kempore, and therefore, Kempore dispersions were not included in production numbers (Strauss, 1999). Production decreased from 1979 to 1984, therefore, production levels for 1985 and 1986, which were not available, were assumed to be the same as production levels in 1984. The 1986 production level was scaled down to reflect that production had ceased by September of 1986.

B-4. Hydrazine

The chlorourea (CCU) process was developed at the Wilmington property to manufacture hydrazine for the production of Kempore. The CCU process was carried out in Plant C-3 (Figure B-1) from 1963 until sometime in 1970 (Environmental Disclosure, 1980; McBrien, 1980a; Papazian, 1967b; Strauss, 1961; Strauss, 1999). After 1970, hydrazine for the Kempore process was purchased.

B-4.1 Hydrazine Product Formulation

The manufacturing procedures and chemical reactions summarized in this section are taken from Strauss (1999). The CCU process was conducted in several steps. The first step was completed in a glass-lined Pfaudler reactor, where liquid chlorine (Cl_2) was mixed with a large excess of urea (NH_2CONH_2) suspended in a small quantity of water. The chlorourea mixture, containing chlorourea, urea hydrochloride complex, and urea, was metered into a pipeline reactor with an excess of sodium hydroxide solution (NaOH). The reaction products from the pipeline reactor were charged to a covered quench tank

containing excess sulfuric acid (H_2SO_4). Carbon dioxide was generated in this step and was vented to a scrubber, where it was absorbed and drained to a floor drain. The overall chemical reaction is

$$NH_2CONH_2 + Cl_2 + 4NaOH + H_2SO_4 \rightarrow N_2H_4 + 2NaCl + Na_2SO_4 + H_2CO_3 + 2H_2O \quad . \tag{B-8}$$

The quenched slurry was pumped into a horizontal filter box to remove precipitated sodium chloride (NaCl) and sodium sulfate (Na_2SO_4) salts. The salts were washed with cold water to remove adhered solution, and the filtrate solution containing the hydrazine (N_2H_4) was transferred to the Kempore process in Plant C-1. The remaining salts on the filter box were dissolved in hot water and discharged to the drain. A schematic of the general steps of the process is presented in Figure B-5.

B-4.2 Hydrazine Waste Streams

The discharges to the drain included the salt solution from the hot water wash (sodium chloride and sodium sulfate) and the scrubber water (Table B-6). At least from 1969 on, water for the hydrazine scrubber (20 gpm) was taken from cooling water (Badger, 1969). Therefore, water for the hydrazine scrubber was not calculated as part of the hydrazine waste stream but was included in the water calculation for the cooling water and other miscellaneous water streams (Section B-8). The amount of hot water added to dissolve the salts was the amount required to produce a 30% salt solution (Strauss, 1999). Wastes were sent to the East and West Pits from 1963 through 1965 and the Acid Pits from 1966 through 1970 (Figure B-1; Papazian, 1997a). Figure B-5 illustrates the general steps in the process, with typical quantities of batch reactants and products.

B-4.3 Hydrazine Production

Annual production of hydrazine (Table B-7) was estimated with available production records (Badger, 1969; NPI Operations Reports, 1965; NPI Operations Reports, 1966).

For years that data were not available, hydrazine production was estimated from Kempore production. The ratio of hydrazine to Kempore (0.34) was calculated from the years of available data, averaged, and applied to Kempore production for the years that no hydrazine data were available.

B-5 Wytox ADP

Wytox ADP, also referred to by other names, such as dioctyldiphenylamine (DODPA), Lestane, or Lestane X, is a rubber stabilizer used to protect rubber products from heat deterioration and flex cracking (Environmental Disclosure, 1980; Judd, 1997; Lasman, 1965; McBrien, 1983c). Wytox ADP was manufactured in Plant B (Figure B-1) from 1961 until 1971 (Badger, 1969; Judd, 1997; Riley, 1997a; Strauss, 1999).

B-5.1 Wytox ADP Product Formulation

The manufacturing information summarized in this section is taken from Strauss (1999). Wytox ADP ($C_{23}H_{43}N$) was produced by reacting diphenylamine (DPA, $C_{12}H_{11}N$) and di-isobutylene (DIB, C_8H_{16}) in the presence of an aluminum chloride ($AlCl_3$) catalyst, i.e.,

$$C_{12}H_{11}N + 2C_8H_{16} \xrightarrow{AlCl_3} C_{28}H_{43}N \quad . \qquad \text{(B-9)}$$

The aluminum chloride catalyst was removed from the batch by repeated washing with dilute caustic in water, which reacted to form aluminum hydroxide ($Al(OH)_3$) and sodium chloride (NaCl), i.e.,

$$AlCl_3 + 3NaOH \rightarrow Al(OH)_3 + 3NaCl \quad . \qquad \text{(B-10)}$$

After each water addition, the mixture was allowed to settle and the water layer containing the aluminum hydroxide and sodium chloride drained from the bottom of the reactor. A schematic of the general steps in the process is presented in Figure B-6. The finished product was drained in liquid form into long metal pans equipped with a heavy

chain on the inside of the pan (Wandell, 1997). The pans were placed outside of Plant B to dry. When the product had dried to a solid, the chain in the pan was pulled, breaking up the product into chunks that could be picked up and placed in barrels. The barrels were then removed to the grinding area where the Wytox ADP was ground to a prescribed particle size and packaged for shipping.

B-5.2 Wytox ADP Waste Streams

The drain liquid included aluminum hydroxide, DIB, Wytox ADP, sodium chloride, and sodium hydroxide (Table B-8). In addition, the drain liquid included water (200 gallons) from the dilute caustic wash to remove the catalyst (Strauss, 1999). Liquid wastes were sent to Lake Poly from 1961 to 1969 and to the Acid Pits from 1970 to 1971 (Badger, 1969; Environmental Disclosure, 1980; Riley, 1997a). Figure B-6 illustrates the general steps in the process, with typical quantities of batch reactants and products.

B-5.3 Wytox ADP Production

Annual production levels of Wytox ADP (Table B-9) were determined from available production records (Badger, 1969; Papazian and Moorman, 1963; NPI Operations Reports, 1964; NPI Operations Reports, 1965; NPI Operations Reports, 1966; NPI Daily Production Summaries for Weeks Ending August to December, 1961; Swanson, 1961). For years that data were not available, Wytox ADP production was determined by interpolating between available data.

B-6 OBSC/OBSH

OBSH (4,4' oxybisbenzenesulfonylhydrazide) is a rubber blowing agent that was produced in Plant D at the Wilmington property from 1970 until 1975 (Badger, 1969; McBrien, 1974a; McBrien, 1974b; Riley, 1997b; Strauss, 1999). OBSC (4,4' oxybisbenzenesulfonylchloride), an intermediate in producing OBSH, was sold as a wet cake from 1972 until 1975 (McBrien, 1974a; McBrien, 1974b). Liquid wastes were generated both in the production of OBSH and OBSC.

B-6.1 OBSH Product Formulation

The manufacturing information summarized in this section is taken from McBrien (1974b) and Strauss (1999). OBSH was formulated in a two step reaction. In the first step, chlorosulfonic acid (CSA, $HClSO_3$) and diphenyloxide (DPO, $C_{12}H_{10}O$) were reacted to form the intermediate OBSC ($C_{12}H_8O_5S_2Cl_2$), i.e.,

$$C_{12}H_{10}O + 4HClSO_3 \rightarrow C_{12}H_8O_5S_2Cl_2 + 2HCl + 2H_2SO_4 \quad . \qquad \text{(B-11)}$$

The hydrochloric acid (HCl) generated in this reaction was absorbed by water in a scrubber and sold as an impure muriatic acid solution and was therefore not part of the drain liquid (Strauss, 1999). The excess CSA was converted to sodium chlorosulfonate ($ClSO_3Na$) by reaction with sodium chloride (NaCl),

$$HClSO_3 + NaCl \rightarrow ClSO_3Na + HCl \, . \qquad \text{(B-12)}$$

The OBSC batch solution was filtered and washed several times to remove the acidity. When OBSC was also sold as a wet filter cake from 1972 to 1975, the material was additionally washed with a salt solution. Hydrazine (N_2H_4), ammonium hydroxide (NH_4OH), oil, and water were added to the OBSC solution in a second step to formulate OBSH ($C_{12}H_{14}O_5S_2N_4$), i.e.,

$$C_{12}H_8O_5S_2Cl_2 + 2N_2H_4 + 2NH_4OH \rightarrow C_{12}H_{14}O_5S_2N_4 + 2NH_4Cl + 2H_2O \quad . \qquad \text{(B-13)}$$

The reaction solution was then filtered, generating a filtrate containing unreacted CSA, sodium chlorosulfonate, sulfuric acid, hydrochloric acid, and ammonium chloride. A schematic of the general steps in the process is presented in Figure B-7.

B-6.2 OBSC/OBSH Waste Streams

The drain liquid included unreacted CSA, and hydrochloric acid, sulfuric acid, sodium chlorosulfonate, and ammonium chloride produced by reaction (Table B-10). In addition, water added for filtration, added to the OBSH reactor, contained in the hydrazine and ammonium hydroxide solutions, and produced by reaction were included in the drain liquid (McBrien, 1974b). When OBSC was sold as a wet filter cake, an additional washing step was conducted that generated additional liquid wastes. This contribution was calculated indirectly with other miscellaneous waste streams in Section B-8. Wastes were sent to the Acid Pits from 1970 to 1971 and to the wastewater treatment plant from 1972 to 1975 (Environmental Disclosure, 1980; Riley, 1997b). Figure B-7 illustrates the general steps in the process, with typical quantities of batch reactants and products.

B-6.3 OBSC/OBSH Production

Annual production levels of OBSC/OBSH (Table B-11) were determined from available production records (Badger, 1969; McBrien, 1974b). Production from 1970 to 1973 did not show a growth trend, therefore, production for 1973 was used for the later years that data were not available (1974 and 1975).

B-7 Wiltrol-N

Wiltrol-N (n-nitrosodiphenylamine), a retarder used to inhibit scorching and enhance the cure of rubber at processing and vulcanizing temperatures (Lasman, 1965), was produced in Plant B (Figure B-1) from mid-1966 to 1967 (Environmental Disclosure, 1980; Papazian, 1997a; Riley, 1997a; Strauss, 1999).

B-7.1 Wiltrol-N Product Formulation

The manufacturing information summarized in this section is taken from Riley (1966a) and Strauss (1999). Wiltrol-N was manufactured by reacting diphenylamine (DPA, $C_{12}H_{11}N$) in a warm solution of sulfuric acid (H_2SO_4) and water in a 1,000 gallon glass-

lined Pfaudler reactor. A 40% sodium nitrite ($NaNO_2$) solution was added over a 2- to 3-hour period. Wiltrol-N ($C_{12}H_{10}N_2O$), was formed according to the chemical reaction,

$$C_{12}H_{11}N + NaNO_2 + \tfrac{1}{2}H_2SO_4 \rightarrow C_{12}H_{10}N_2O + \tfrac{1}{2}Na_2SO_4 + H_2O \quad . \qquad \text{(B-14)}$$

When the reaction was complete, the batch was allowed to separate into two layers and the bottom layer containing water and wastes was drained to the sewer. The remaining product layer was washed with 400 gallons of water, which was also sent to the sewer. The batch was then pumped to a tank containing cold water (prilling tank), where the Wiltrol-N solidified. The "prilled" product was drained on a filter box and dried at low temperature. The prilling liquid, which contained water and a small amount of Witrol-N was also sent to the sewer. A schematic of the general steps in the process is presented in Figure B-8.

B-7.2 Wiltrol-N Waste Streams

The drain liquid included sulfuric acid, Wiltrol-N, and sodium sulfate (Table B-12). In addition, the discharge included water added to the batch, used to wash the batch, produced by chemical reaction (equation B-14), and used during the prilling step (Riley, 1966a; Strauss, 1999). It was calculated from available information that the prilling step was conducted in a 1,000-gal tank, similar to the reaction tank, and that the tank contained 500 gallons water (Riley, 1966a). Liquid wastes from the Wiltrol-N process were sent to Lake Poly from 1967 to 1968 (Riley, 1997a). Figure B-8 illustrates the general steps in the process, with typical quantities of batch reactants and products.

B-7.3 Wiltrol-N Production

Annual production levels of Wiltrol-N (Table B-13) were estimated from available production records (NPI Operations Reports, 1966). No data were available for 1967, therefore, production for the half year of production for 1966 was doubled for 1967.

B-8 Miscellaneous Waste Streams

The previous sections describe the liquid waste streams generated by the Opex, Kempore, hydrazine, Wytox ADP, OBSC/OBSH, and Wiltrol-N processes at various times from 1953 to 1986. In addition to those wastes, other liquid wastes were sent to the sewer from time to time, such as plant upsets, waste product, equipment washes, plant washes, and cooling water (Cantwell, 1997; Knight, 1999; McBrien, 1973; McBrien, 1981; NPI, 1966; Riley, 1997b; Strauss, 1999; Willwerth, 1997). Insufficient information was available to calculate these streams individually, therefore, they were calculated together as the difference between the total amount of process waste described in the previous sections and the total process waste flows reported in available documents (Badger, 1969; Garman, 1967; Raytheon, 1970; Riley, 1973). For years that information was not available, an interpolation was done between known values. For 1952 to 1967, an interpolation from 0 gpm in 1952 to the value reported in documents for 1967 was used (Table B-14).

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B-9 References

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Tables

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Table B-1. Opex Waste Composition

Compound	Waste Stream (lbs/lbs Opex)
Sodium Nitrite	0.089
598 Oil	0.037
Formaldehyde	0.34
Ammonium Chloride	0.21
Sodium Chloride	0.64
Water	6.76

Table B-2. Opex Production

Year	Amount (lbs)	Reference	Notes
1953	76,369		linear increase from 1952 to 1961
1954	152,738		linear increase from 1952 to 1961
1955	229,107		linear increase from 1952 to 1961
1956	305,476		linear increase from 1952 to 1961
1957	381,846		linear increase from 1952 to 1961
1958	458,215		linear increase from 1952 to 1961
1959	534,584		linear increase from 1952 to 1961
1960	610,953		linear increase from 1952 to 1961
1961	687,322	Weekly Production, 1961a; Swanson, 1961	
1962	1,443,661		linear increase between 1961 and 1963
1963	2,200,000	ABR, 1963	
1964	2,200,000	ABR, 1963	
1965	842,575	NPI Operations Reports, 1965	
1966	931,268	NPI Operations Reports, 1966	
1967	1,020,845		linear increase between 1966 and 1969
1968	1,110,423		linear increase between 1966 and 1969
1969	1,200,000	Badger, 1969	
1970	1,146,000		linear decrease between 1969 and 1979
1971	1,092,000		linear decrease between 1969 and 1979
1972	1,038,000		linear decrease between 1969 and 1979
1973	984,000		linear decrease between 1969 and 1979
1974	930,000		linear decrease between 1969 and 1979
1975	876,000		linear decrease between 1969 and 1979
1976	822,000		linear decrease between 1969 and 1979
1977	768,000		linear decrease between 1969 and 1979
1978	714,000		linear decrease between 1969 and 1979
1979	660,000	McBrien, 1980b	
1980	552,220		linear decrease between 1979 and 1982
1981	444,440		linear decrease between 1979 and 1982
1982	336,660	McBrien, 1983a	
1983	387,137		linear increase between 1982 and 1984
1984	437,614	McBrien, 1984	
1985	437,614		same as 1984
1986	285,401		same as 1984 levels, production ceased Sept 1, 1986

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Table B-3. Kempore Waste Composition For Sodium Dichromate Process (1956-3/1967)

Compound	Waste Stream (lbs/lbs Kempore)
Urea	0.74
Sulfuric Acid	1.83
Chrome Oxide	0.56
Sodium Sulfate	0.52
Ammonium Sulfate	1.34
Water (1956-1963)	12.8
Water (1964-3/1967)	16.4

Table B-4. Kempore Waste Composition For Sodium Chlorate Process (4/1967-1986)

Compound	Waste Stream (lbs/lbs Kempore)
Urea	0.74
Sulfuric Acid	0.65
Hydrochloric Acid	0.12
Sodium Sulfate	0.24
Ammonium Sulfate	1.34
Hydrogen Bromide	0.0055
Water (4/1967-1970)	15.0
Water (1971-1986)	10.3

Table B-5. Kempore Production

Year	Amount (lbs)	Reference	Notes
1956	63,241		linear increase from 1955 to 1961
1957	126,482		linear increase from 1955 to 1961
1958	189,724		linear increase from 1955 to 1961
1959	252,965		linear increase from 1955 to 1961
1960	316,206		linear increase from 1955 to 1961
1961	379,447	Weekly Production, 1961a; Swanson, 1961	
1962	739,724		linear increase from 1961 to 1963
1963	1,100,000	ABR, 1963	
1964	1,100,000	ABR, 1963	
1965	815,031	NPI Operations Reports, 1965	
1966	1,743,823	NPI Operations Reports, 1966	
1967	1,279,924	Production, 1967	
1968	1,489,962		linear increase from 1967 to 1969
1969	1,700,000	Badger, 1969	
1970	1,452,960	McBrien, 1980a	
1971	1,982,620	McBrien, 1980a	
1972	2,188,750	McBrien, 1980a	
1973	2,627,929	McBrien, 1980a	
1974	3,281,140	McBrien, 1980a	
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1976	2,891,903	McBrien, 1980a	
1977	2,662,276	McBrien, 1980a	
1978	3,309,138	McBrien, 1980a	
1979	3,559,821	McBrien, 1980a	
1980	3,198,414		linear decrease from 1979 to 1982 levels
1981	2,837,007		linear decrease from 1979 to 1982 levels
1982	2,475,600	McBrien, 1983a	
1983	2,605,962		linear increase from 1982 to 1984
1984	2,736,324	McBrien, 1984	
1985	2,736,324		same as 1984
1986	1,784,559		same as 1984 levels, production ceased Sept 1, 1986

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0041-0090

Table B-6. Hydrazine Waste Composition

Compound	Waste Stream (lbs/lbs Hydrazine)
Sodium Chloride	5.21
Sodium Sulfate	6.48
Carbonic Acid	2.76
Water	27.3

Table B-7. Hydrazine Production

Year	Amount (lbs)	Reference	Notes
1963	370,700		derived as ratio (0.34) of Kempore production
1964	370,700		derived as ratio (0.34) of Kempore production
1965	279,983	NPI Operations Reports, 1965	
1966	432,766	NPI Operations Reports, 1966	
1967	431,334		derived as ratio (0.34) of Kempore production
1968	502,117		derived as ratio (0.34) of Kempore production
1969	572,900		derived as ratio (0.34) of Kempore production
1970	361,913		derived as ratio (0.34) of Kempore production, production ceased Sept 1, 1986

0041-0092

OW 793987

Table B-8. Wytox ADP Waste Composition

Compound	Waste Stream (lbs/lbs Wytox ADP)
Diisobutylene (DIB)	0.021
Wytox ADP	0.030
Aluminum Hydroxide	0.050
Sodium Chloride	0.11
Sodium Hydroxide	0.036
Water	0.67

Table B-9. Wytox ADP Production

Year	Amount (lbs)	Reference	Notes
1961	144,601	Weekly Production, 1961a; Swanson, 1961	
1962	157,637		linear increase from 1961 to 1963
1963	170,673	Papazian and Moorman, 1963	
1964	347,561	NPI Operations Reports, 1964	
1965	356,186	NPI Operations Reports, 1965	
1966	456,785	NPI Operations Reports, 1966	
1967	504,523		linear increase from 1966 to 1969
1968	552,262		linear increase from 1966 to 1969
1969	600,000	Badger, 1969	
1970	600,000		same as 1969 levels
1971	600,000		same as 1969 levels

Table B-10. OBSC/OBSH Waste Composition

Compound	Waste Stream (lbs/lbs OBSH)
Chlorosulfonic Acid (CSA)	0.51
Hydrochloric Acid	0.49
Sodium chlorosulfate	0.61
Sulfuric Acid	0.84
Ammonium Chloride	0.21
Water (OBSH)	10.4
Water (OBSC)	7.7

Table B-11. OBSC/OBSH Production

Year	Amount (lbs OBSH)		Reference	Notes
	OBSH	OBSC		
1970	300,000	0	Badger, 1969	
1971	314,925	0	McBrien, 1974b	
1972	293,828	163,730	McBrien, 1974b	
1973	287,430	230,301	McBrien, 1974b	
1974	287,430	230,301		same as 1973
1975	287,430	230,301		same as 1973

Table B-12. Wiltrol-N Waste Composition

Compound	Waste Stream (lbs/lbs Wiltrol-N)
Sulfuric Acid	0.037
Wiltrol-N	0.087
Sodium Sulfate	0.392
Water	6.1

0041-0097

OW 793992

Table B-13. Wiltrol-N Production

Year	Amount (lbs)	Reference	Notes
1966	108,940	NPI Operations Reports, 1966	production for 5.5 months
1967	227,784		scaled 1966 production to full year for 1967

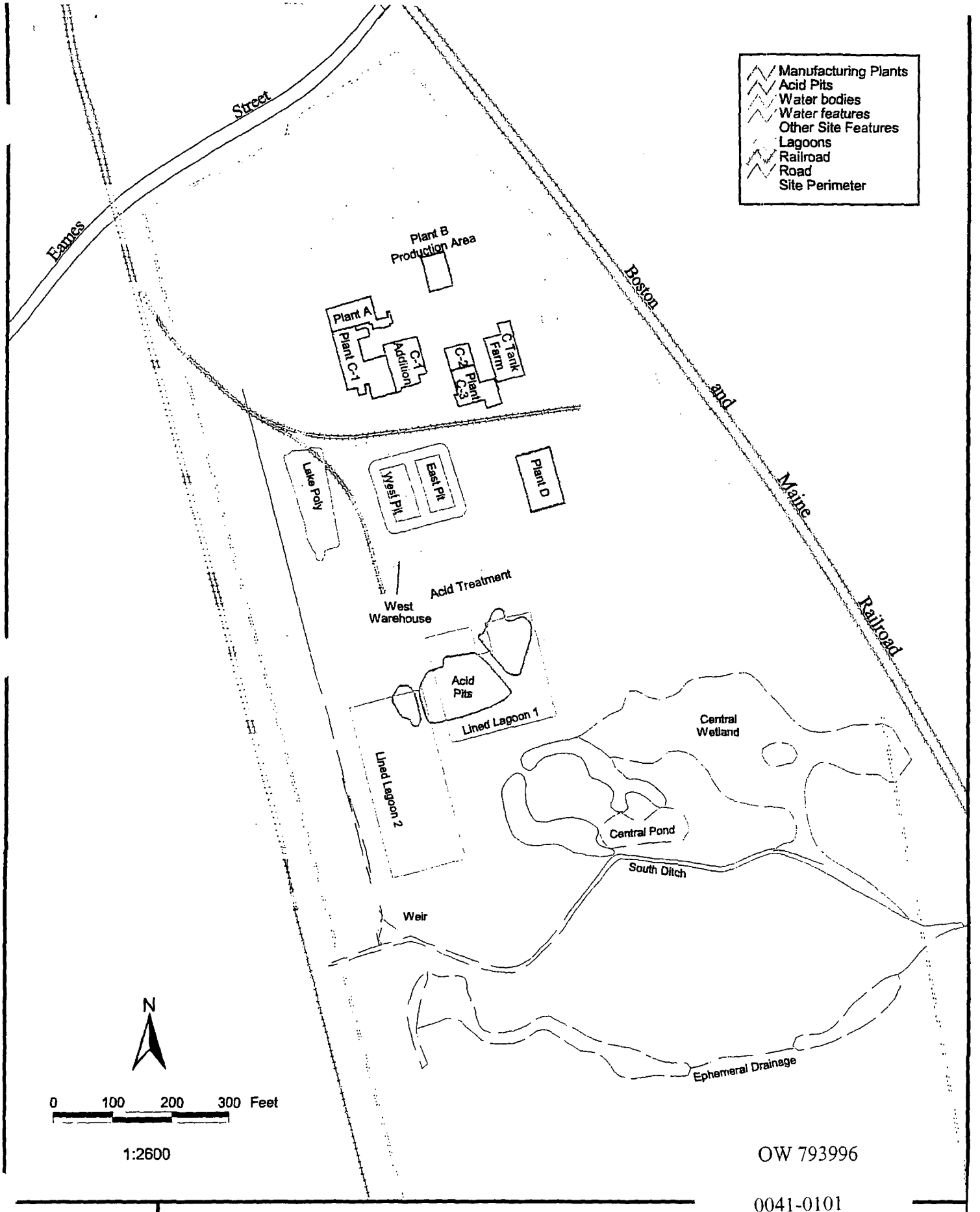
Table B-14. Miscellaneous Liquid Wastes

Year	Miscellaneous Wastes (lb/yr)
1953	44,791,633
1954	89,583,265
1955	134,374,898
1956	178,098,870
1957	221,822,842
1958	265,546,815
1959	309,270,787
1960	352,994,759
1961	396,588,448
1962	401,802,273
1963	537,846,652
1964	591,599,889
1965	665,773,530
1966	772,851,294
1967	842,933,701
1968	1,210,541,851
1969	1,352,700,000
1970	599,845,907
1971	683,224,194

Figures

0041-0100

OW 793995



OW 793996

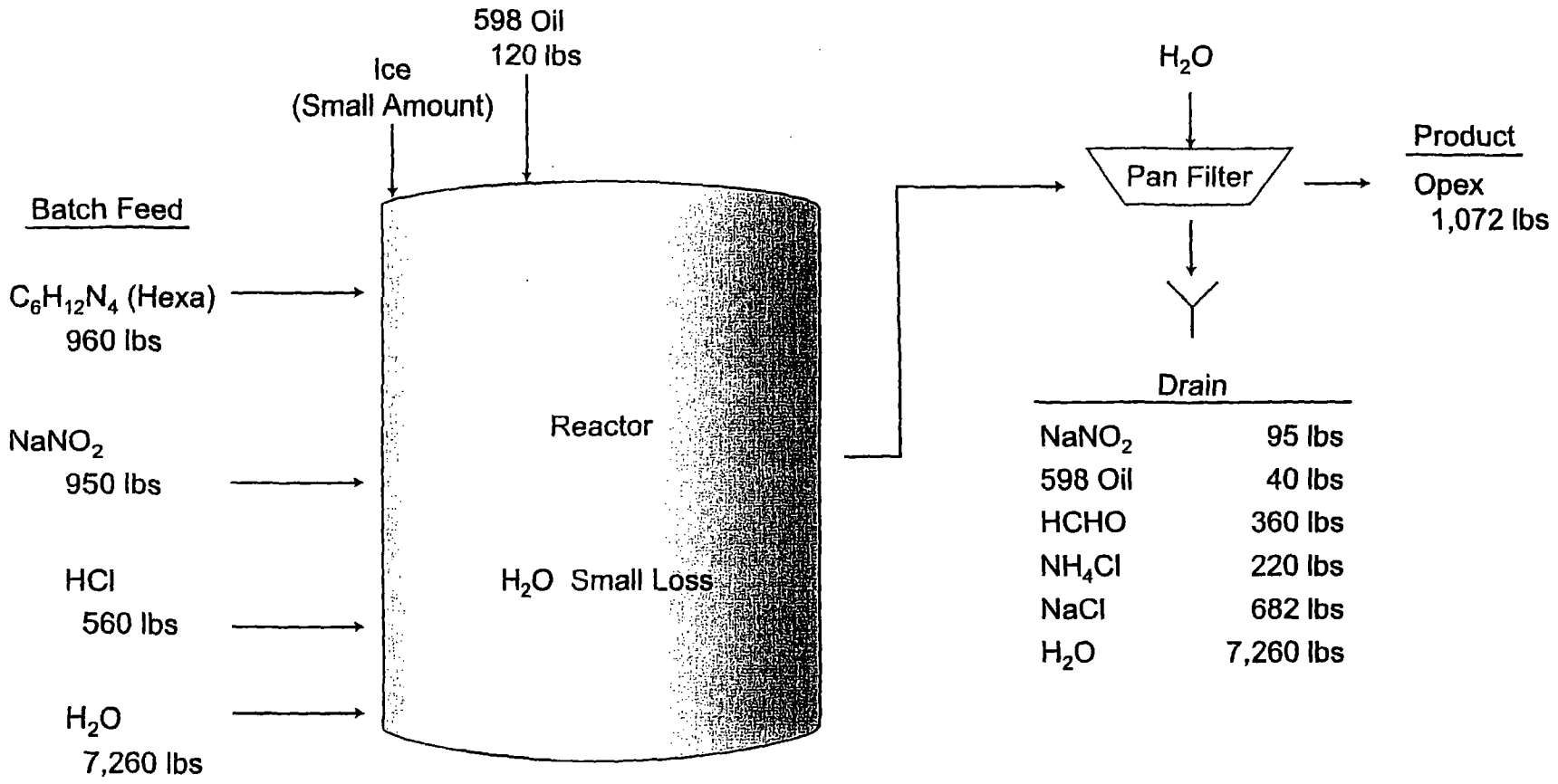
0041-0101

Generation Date: 7/27/99

Figure B-1. Manufacturing Plants and Pits, Ponds, and Lagoons at the Wilmington Property from 1953 to 1986.

Geomega

\\dg\J:\Projects\olin\acadfiles\evolve1298.apr: Man. Plants Layout-4/13/99-fig6-1 fltg



Generation Date: 7/28/99	Figure B-2. Opex process diagram (typical batch).	Geomega

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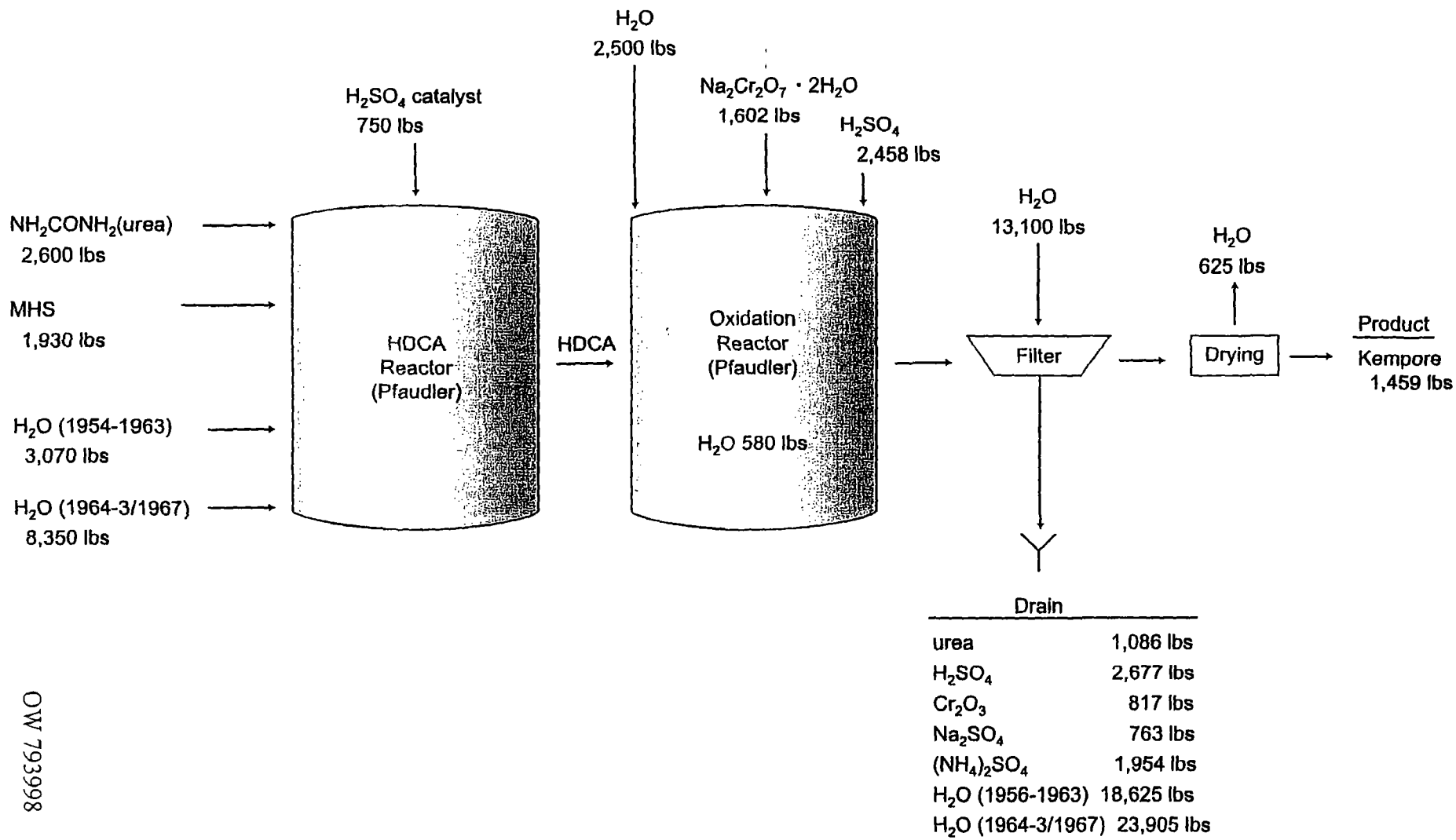
OW 793997

0041-0102



Generation Date: 7/28/99	Figure B-3. Kempore process diagram (typical batch) using sodium dichromate from 1956 to March 1967.	Geomega

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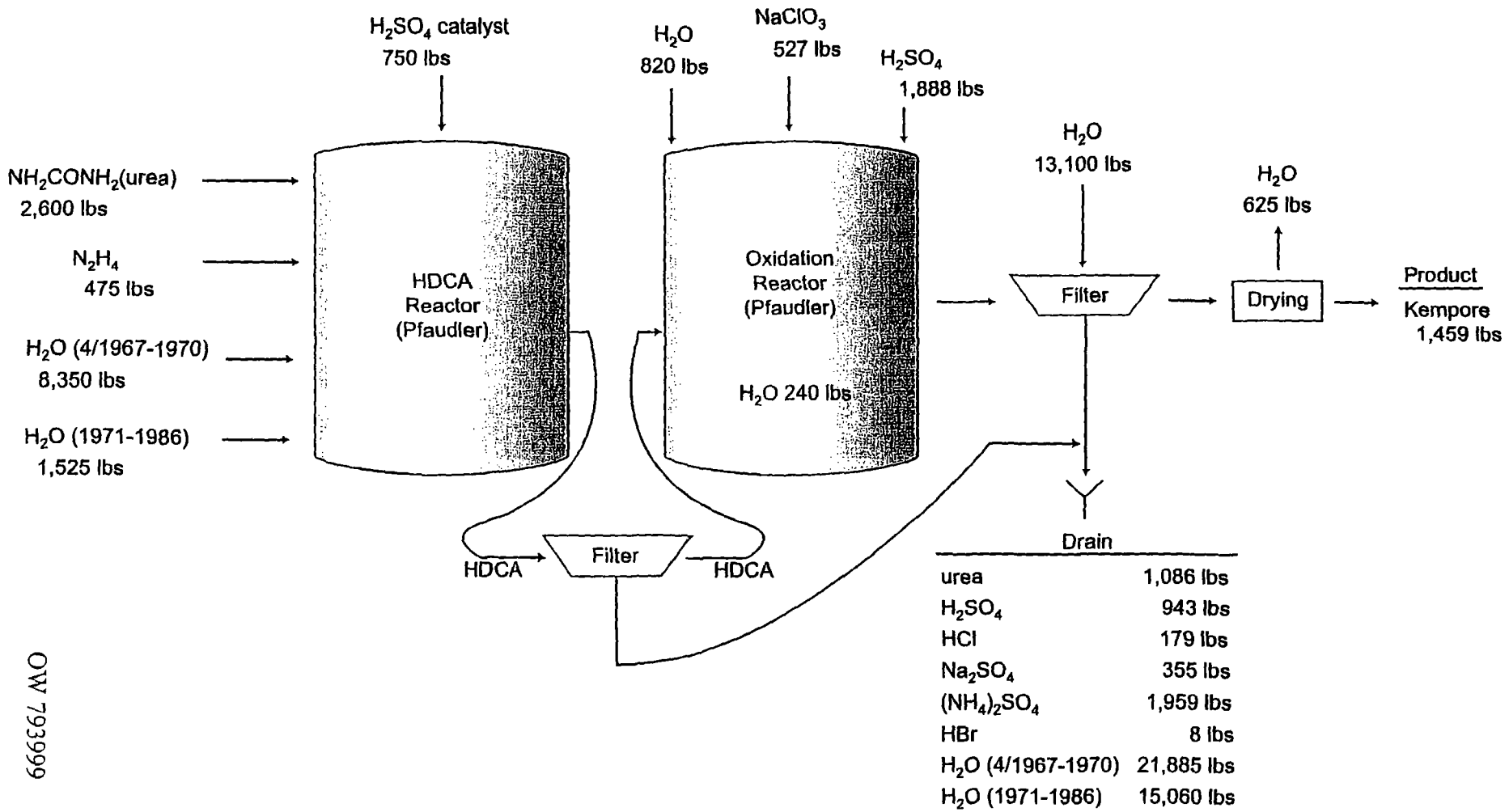
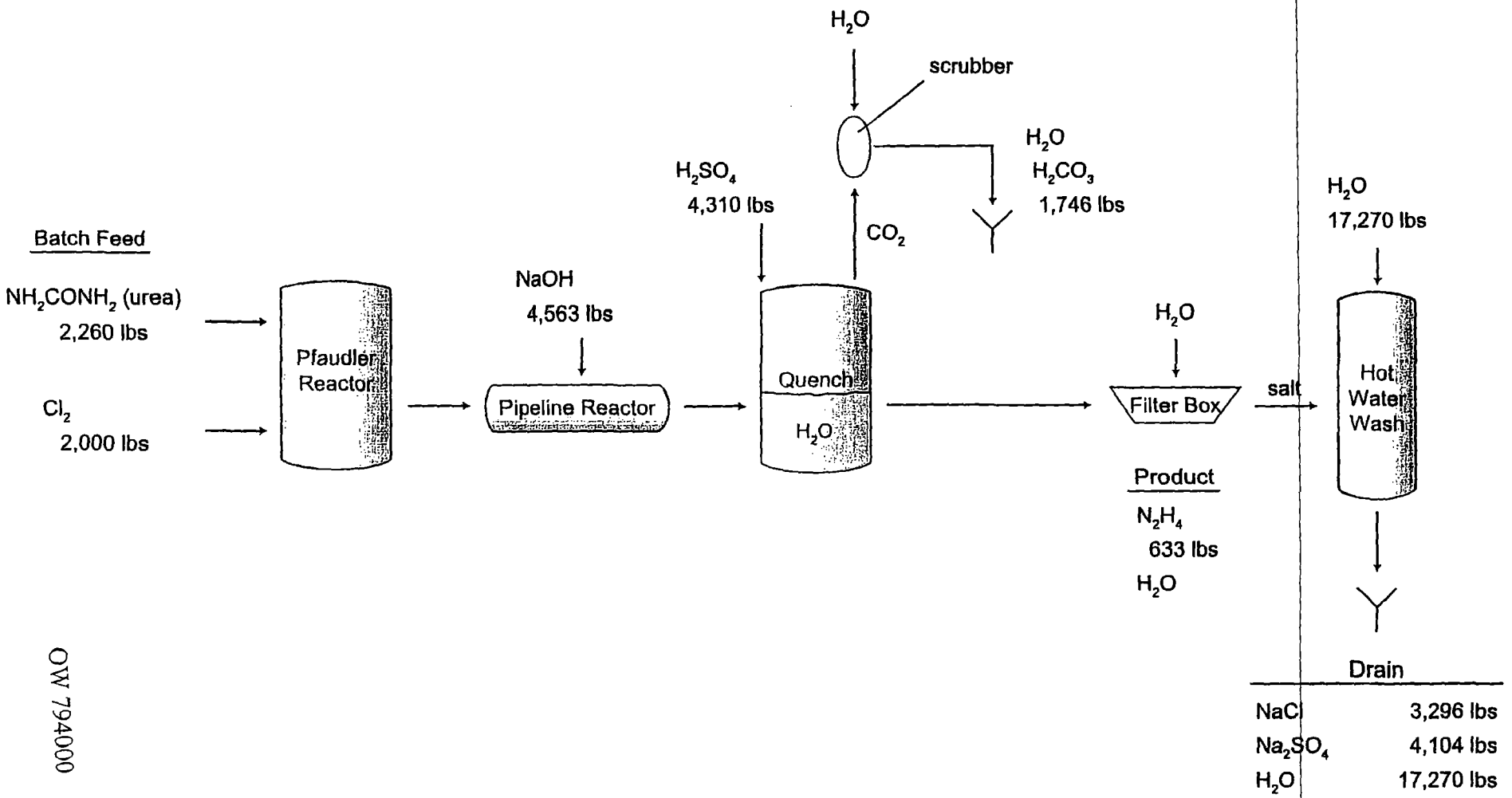
OW 793998

0041-0103



Generation Date: 7/28/99	Figure B-4. Kempore process diagram (typical batch) using sodium chlorate from April 1967 to 1986.	Geomega

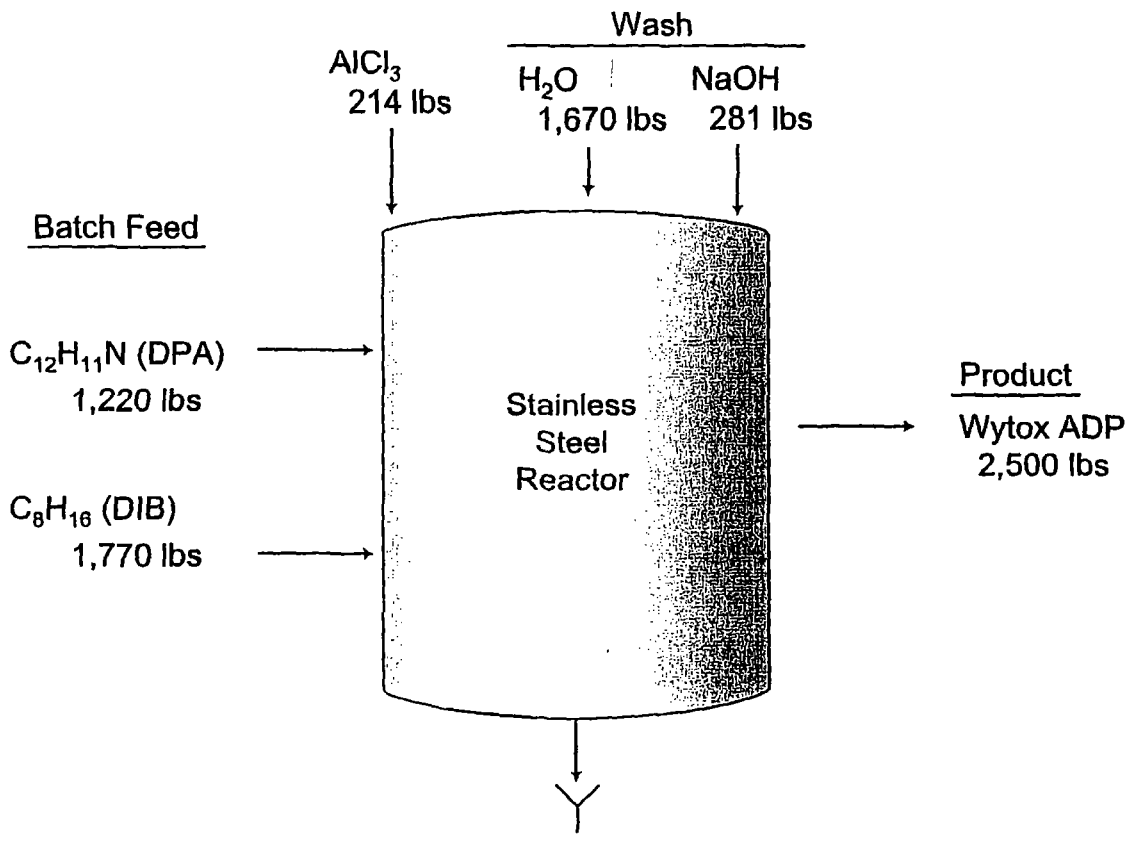


Generation Date: 7/28/99	Figure B-5. Hydrazine process diagram (typical batch).	Geomega

o:\Olin\Litigation\hydrazine799.process.ai

OW 794000

0041-0105



Drain

Wytox ADP	75 lbs
$Al(OH)_3$	125 lbs
NaCl	281 lbs
NaOH	89 lbs
DIB	53 lbs
H_2O	1,670 lbs

Generation Date: 7/28/99	Figure B-6. Wytox ADP process diagram (typical batch).	Geomega

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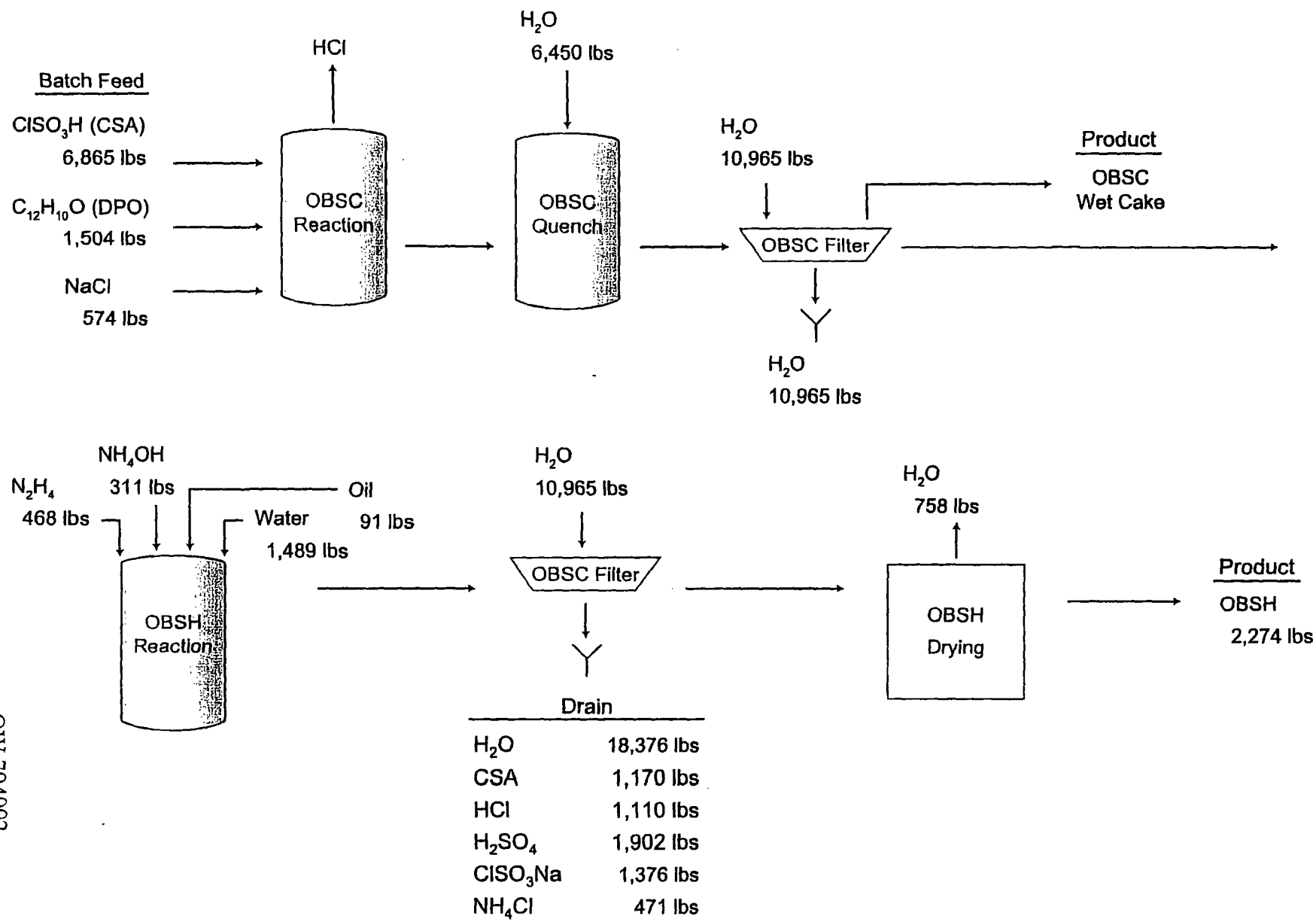
OW 794001

0041-0106



Generation Date: 7/28/99	Figure B-7. OBSC/OBSH process diagram (typical batch).	Geomega

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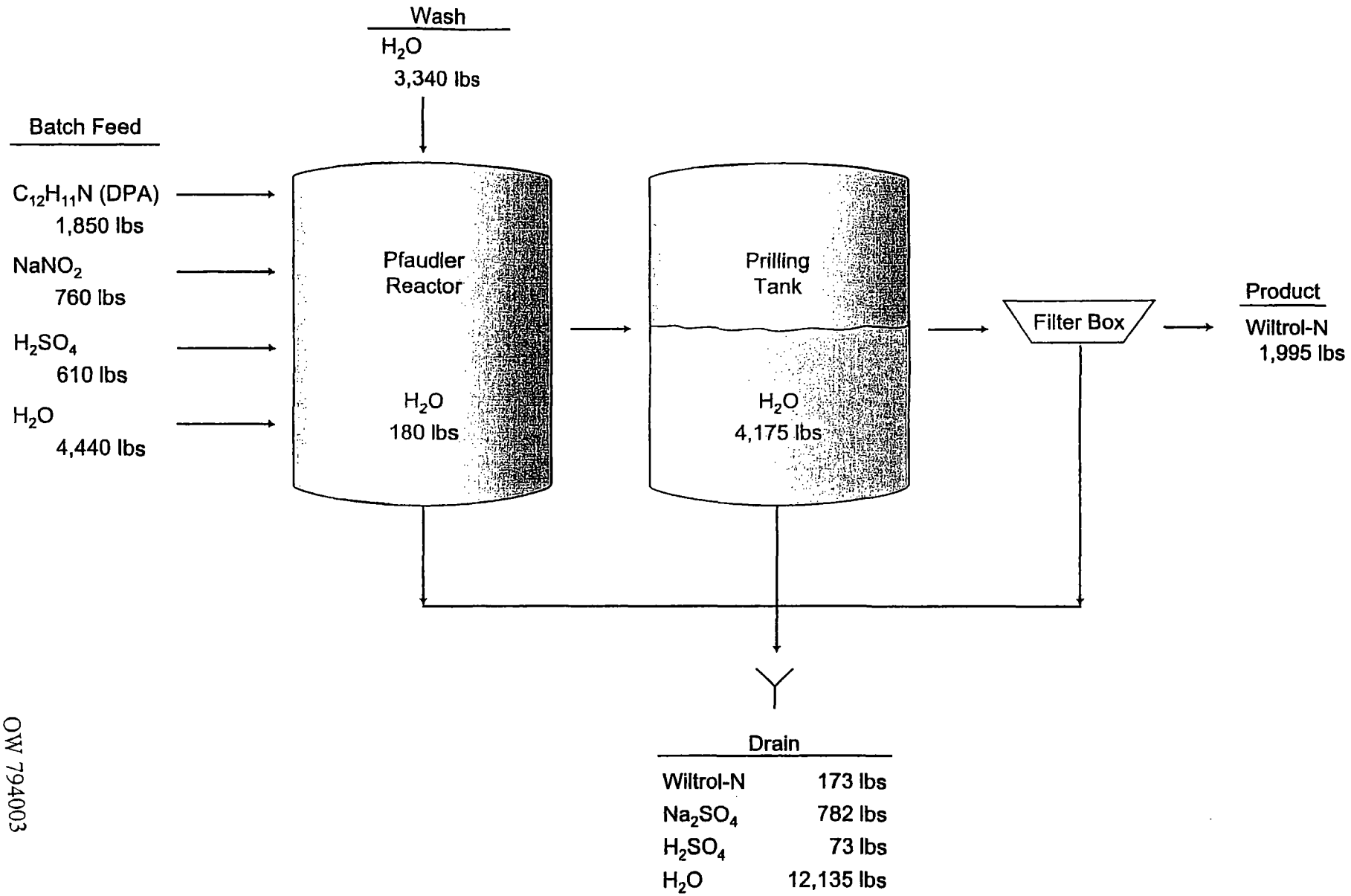
OW 794002

0041-0107



Generation Date: 7/28/99	Figure B-8. Wiltrol-N process diagram (typical batch).	Geomega

n:\Olin\Litigation\Wiltrol-NProcess799.al

OW 794003

0041-0108

ATTACHMENT 2

Stepan

Telephone 312 4 500

F. Wilm
1983-Gen
cc SGM

ENVIRONMENTAL DISCLOSURE

JULY 23, 1980

In accordance with the requirements of Section 3.05 and 3.06 of the Agreement of Purchase and Sale between Olin and Stepan Chemical Company, the attached disclosure sets forth the pollution litigation and administrative proceedings, manufacturing processes and chemical waste disposal with regard to the Polychem (Wilmington) plant which occurred subsequent to Stepan's purchase of the plant late in 1968. In addition, this same type of information with regard to processes and waste disposal practices, which occurred prior to Stepan's ownership, are shown where they are known.

The Corporate and Plant Management personnel who have reviewed these matters and prepared the enclosure are:

Charles P. Riley, Jr.	-	Corporate Director of Manufacturing and Engineering
Ronald J. McBrien	-	Wilmington Plant Manager
Walter Beck	-	Group Leader, Corporate Research and formerly Polychem Technical Manager

WWM:gb

OW 091249

July 23, 1980

Exhibit 3.06

Environmental Disclosure*

1. Suits

Commonwealth of Massachusetts vs. Stepan Chemical Co., Inc. Suffolk Superior Court (served April 22, 1980) cites violation of the Massachusetts Hazardous Waste Management Act and violation of the Massachusetts Clean Waters Act in the storage and disposal of hazardous wastes.

In a joint meeting on April 30, 1980 at the Boston office of Sullivan and Worcester, representatives of Olin, Stepan, the Attoney General's office, and the Division of Water Pollution Control discussed the disposition of the above court action. It was agreed between the representative of the Attorney General and the representative of the Division of Water Pollution Control that if Olin Corporation purchased the Stepan, Wilmington plant site, the following would apply:

a.) Olin would have 12-18 months for an engineering study to define pollution problems and to suggest remedies.

b.) There would be no prosecution by the State during this period.

c.) Olin could expect to expand operations at the site.

The Attorney General and Stepan's counsel have jointly applied for a two month extension of the court action to accomodate Olin's decision on purchase of the property.

The seller has no knowledge of any other suit, threatened suit, actions, proceedings or claims under any applicable federal, state or local law or other environmental matters.

2. Manufacturing Processes Conducted on Wilmington Site, Sellers' Best Knowledge

a.) Opex - (Dinitrosopentamethylenetetramine)

Raw materials: Hexamethylenetetramine
Sodium ~~nitrate~~ nitrite
Hydrochloric acid
Processing oil - Ammonia

Product: Dinitrosopentamethylenetetramine (solid)

By-products in waste: ✓Sodium chloride
✓Sodium ~~nitrite~~ nitrate
✓Formaldehyde
✓Processing oil - Ammonium Chloride

Process operated: 1953-1980

*All information prior to Stepan's purchase of plant in 1968 is based on knowledge of Ron McBrien and Charles P. Riley, Jr. Stepan has not made any investigation with regard to matters before it acquired the plant in 1968.

OW 091250

Exhibit 3.06
Environmental Disclosure

b.) Kempore - (Azodicarbonamide)

Raw materials: Hydrazine
Urea
Sulfuric acid
Sodium chlorate
Sodium Bromide ~~Bromine~~ (catalyst level)

Product: Azodicarbonamide (solid)

By-products in waste: Sodium sulfate
Sulfuric acid
Urea
Sodium chloride
Ammonium sulfate
Sodium Bromide

Up to 1967, sodium dichromate was used in the process instead of Sodium chlorate. The by-product waste contained chrome sulfate instead of sodium chloride and sodium sulfate.

Process operated: 1956-1980

c.) Hydrazine

Raw materials: Urea
Chlorine
Sodium hydroxide
Sulfuric acid

Product: Hydrazine and Semicarbazide solution

By-products in waste: Sodium sulfate
Sodium chloride
Ammonium Sulfate

Note: This process was shut down in the fall of 1970 with hydrazine then purchased from Olin Corporation. (operated 1963-1970)

d.) Kempore Dispersions

Raw materials: Azodicarbonamide
Dioctyl phthalate

Product: 50 percent dispersion of Azodicarbonamide in Dioctyl Phthalate

By-products in waste: None

Process operated: 1960-1980

e.) Wytox 312 - (trisnonylphenyl phosphite)

Raw materials: Nonyl phenol
Phorphorus trichloride

OW 091251

Product: Trisnonylphenyl phosphite (liquid)

By-products in waste: None (hydrogen chloride scrubbed in water)

Process operated: 1965-1980

Exhibit 3.06
Environmental Disclosure

f.) Actafoam R-3

Raw materials: 2-ethylhexoic acid
Zinc oxide
Dioctyl phthalate
~~Sodium oleate~~ Potassium oleate

Product: Liquid Azodicarbonamide activator

By-products in waste: None

Process operated: 1963-1980

g.) Wytox Pap - (Alkylated phenol)

Raw materials: Nonyl phenol
Dinonyl phenol
Formaldehyde

Product: Liquid Alkylated phenol

By-products in waste: None

Process operated: 1971-1980

h.) Nitropore 5PT - (5-phenyltetrazole)

Raw materials: Benzonitrile
Sodium azide
Sodium nitrite
Ammonium chloride
Hydrochloric acid
Dimethyl Formamide

Product: 5-phenyltetrazole (solid)

By-products in waste: Sodium chloride
Sodium nitrate
Dimethyl Formamide
Benzonitrile

(produced 1973-1980, limited quantities 24,000 lbs./yr.)

i.) Nitropore OT - (4,4' oxybisbenzenedisulfonylhydrazide)

Raw materials: Diphenyl oxide
Chlorosulfonic acid
Hydrazine
Ammonia

Product: 4,4' oxybisbenzenedisulfonylhydrazide

By-products in waste: Sulfuric acid
~~Hydrochloric acid~~ Ammonium Chloride

Process operated: 1969-1975 (Hydrochloric acid scrubbed in water and sold).

j.) Wytox ADP - (Dioctyl Diphenylamine)

Raw materials: Diphenylamine
Diisobutylene
~~Aluminum hydroxide~~
~~Sodium chloride~~
Sodium hydroxide
Aluminum chloride

OW 091252

Exhibit 3.06
Environmental Disclosure

Product: Dioctyldiphenylamine

By-products in waste: Aluminum hydroxide
~~Sodium chloride~~ Sodium hydroxide

Process terminated in 1971. (Operated 1962-1971)

k.) Phenolic and Urea Formaldehyde Resins

Raw Materials: Phenol
Urea
Formaldehyde

Products: Solid and liquid resins

By-products in waste: Phenol
Formaldehyde

Process operated 1961-1967

l.) Phthalate Plasticizers - (dioctyl phthalate, dibutyl phthalate)

Raw materials: Phthalic anhydride
2-ethylhexanol
Butyl alcohol

Products: Liquid plasticizers

By-products in waste: None

Process operated: 1955-1961

m.) Wiltrol N - (N-Nitrosodiphenylamine)

Raw materials: Diphenylamine
Sodium nitrite
Sulfuric acid

Product: N-Nitrosodiphenylamine (solid)

By-products in waste: Sodium nitrite
Sodium sulfate

Process operated: 1965-1967

n.) *

3. Chemical Waste Disposal

To the seller's best knowledge, chemical manufacturing commenced on the Wilmington plant site around 1953. No waste treatment facility or sewer was included in the original plant facilities. The main plant effluents were discharged to a small man-made pond on the west side of the property which flowed to a brook bisecting the property. The brook exited the property at the east side along the railroad right of way.

Strong acid wastes were conducted separately to unlined man-made lagoons on the south side of the operating plant buildings.

* Small quantities of miscellaneous materials were manufactured at various times which had no by-product wastes.

OW 091253

Exhibit 3.06
Environmental Disclosure

In 1969, Stepan Chemical Company, Inc. and the Division of Water Pollution Control of the Commonwealth of Massachusetts entered into a consent order whereby Stepan was to build a waste treatment plant and the effluents from the treatment plant would be discharged to a Metropolitan District Commission sewer which was to be extended to the immediate area of the plant. Stepan was allowed to continue to discharge chemical wastes in the same manner until the treatment plant was completed. In 1970, with the completion of the treatment plant construction, Stepan was requested to operate the plant and discharge the treated wastes through its property until the sewer construction was complete. The sewer was finished in 1972 and approval was granted to Stepan to discharge the effluents from the treatment plant into the sewer by the Metropolitan District Commission.

The Stepan treatment facility neutralizes sulfuric acid and sulfate wastes with a lime system. The resulting calcium sulfate by-product is separated from the effluent by settling in vinyl lined lagoons. The Department of Public Health of the Commonwealth of Massachusetts approved the construction of a landfill on the Stepan property for the disposal of the calcium sulfate by-products.

The seller has no knowledge of chemical or other dumping on the plant site during its ownership by its own personnel or third parties except as described previously with the discharge of operating wastes. The seller has no knowledge of chemical or other dumping on the property in prior periods.

CPR, Jr./lmg

ATTACHMENT 3

RAW MATERIALS

Acetone
Acryloid K-120n
Aluminum chloride
Anhydrous ammonia
Analine HCL salt
Antifoam 60
Aqua ammonia
Aquarex-L
Arquad 25 75
Arquard 2 ht 75 varisoft
Bentone 27
Bentone 38
Boric acid
Butanol
n-butyl aceate
cab-o-cil
Calcium searate
C S A
D i b
Dinonylphenol
D O P
Liquid DPA
DPO
Deoderant 1056
Ethomeen S-12
2-ethylhexoic acid
Ethylene glycol
Santicizer 722
Liquid Nitrogen
Calcium Carbonate
Darvan-L\
Fare rapeseed
Fast spermoil
Liq. Formalin
Glycerine
Aerosil 380
Vikoflex 71710
Nurostabe V144
Potassium Stearate
P-TSA
Benzonitrile
Dimethylformamide
Ammonium Chloride
Sodium Azide

RAW MATERIALS

Calcium Oxide
Hydrogen Peroxide
Calcium Chloride
Barium Chloride
Sodium Dicarbonate
Dimethyl carbonate
Methanol
N-butanol
Benzophenone
Adipic Acit
Heptane
Formamide
Soda Ash
Hydrazine 64%
Hi-sil 233
Nedex lead octate
100% liquid hexa
Maleic anhydride
Mineral spirits
monohydrazine sulfate
Natrosol
Nurosperse 657
Oxalic acid
Paraformaldehyde powder
Phthalic anhydride
999 salt
Satocel FRC
Silica
Sodium chlorate solid
Sodium nitrite
sodium sulfite
7AT soft
Stantone 12PCOL yel
Stantone 90PCOL black
Sun Par 120
Tall oil liqro
Trancoa 375B
#2 Bordens Urea Form
Uformite MM57
Zinc stearate
hexamine granular
ice
Liquid caustic
microcel E

RAW MATERIALS

Mineral oil
mono ethanolmine
Muriatic acid
Nonyl phenol
415 oil
Paraplex G-62
PCL3
potassium oleate
Safe 7MT
Shellflex 212
Sodium bromide
Sodium chlorate liq
Sodium stearate
sodium acetate
Stantone 10PCOL white
Stantone 26PCOL red
Sulfuric acid
Styreene
Toluene
T.I.A. Tr. Isopropalamine
Prilled Urea
Zinc Oxide

ATTACHMENT 4

TECHNICAL BULLETINS

Opex 40
Kempore 125
Kempore
Kempore Dispersions
Kempore SDA-200
Kempore R-125
Kempore SD-125
Cellular Vinyl Coated Fabrics
Pigmentation of Kempore
Actafoam R-3
RIA NC
RIA 66
Antidust
Antidust - 1060
Acetone
FI-Line' Sensitizers
Tetra-Phen S-201
Tetra -Flex Resins
Poly-Cone
Poly-Cone 125X
Poly-Cone Emulsions
Poly-Cone 200X
Poly-Cone 1000
Poly-Zole AZDN
Poly-Sperse AP-2
Poly-Phen
Wiltrol-P
Wiltrol-N
Wytox
Wytox-ADP
Wytox-BHT
Wytox 355
Wytox 438
NPI 201
NPI 222
NPP 202
Dee-Tac NP-27
Dee-Tac 2000
Dee-Tac NP-27
Synthetic Resins

ATTACHMENT 5

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

OLIN CORPORATION, Plaintiff, v. FISONS PLC, et al., Defendants.	)	C.A. No. 93-11166-MLW

PLAINTIFF OLIN CORPORATION'S SUPPLEMENTAL OBJECTIONS AND ANSWERS TO DEFENDANTS THE BILTRITE CORPORATION AND AMERICAN BILTRITE INC.'S FIRST SET OF INTERROGATORIES

Pursuant to Fed. R. Civ. P. 33 and Local Rule 33.1, Plaintiff Olin Corporation ("Olin") hereby supplements its Objections and Answers to Defendants The Biltrite Corporation and American Biltrite Inc.'s First Set of Interrogatories to Olin Corporation ("Olin's Answers" and "the Biltrite Companies' First Interrogatories"). The General Objections made in Olin's Answers are incorporated by reference in these Supplemental Answers.

SUPPLEMENTAL ANSWERS

Interrogatory No. 7: Identify and state the basis (in accordance with Local Rule 26.5(C)(8)) for each of the "releases" and "threatened releases" of hazardous substances which Olin alleges have occurred at the Wilmington plant from 1952 to the present (including the source of each such release, the date(s) on which each release occurred, the amount of hazardous substances released in each instance, and the location of the release), which "releases", according to the allegations contained in paragraph 65 of the Complaint, "have caused Olin to incur 'necessary costs of response'" and "will continue to cause Olin to incur 'necessary costs of response' within the meaning of [CERCLA]", including:

(a) identify all releases and threatened releases (the source of each such release, the date(s) on which each release occurred, the amount of hazardous substances released in each instance, and the location of the release) of "hazardous substances" (as defined by CERCLA) and "hazardous materials" (as defined by Massachusetts General Laws Chapter 21E) during the period 1952 to January,

1964, which Olin claims caused or may cause the incurrence of response costs by Olin;

(b) identify all releases and threatened releases (the source of each such release, the date(s) on which each release occurred, the amount of hazardous substances released in each instance, and the location of the release) of "hazardous substances" (as defined by CERCLA) and "hazardous materials" (as defined by Massachusetts General Laws Chapter 21E) during the period February, 1964 to August, 1980 which Olin claims caused or may cause the incurrence of response costs by Olin.

Response: Olin incorporates its previous response to this interrogatory by reference. Olin continues to object to this interrogatory on the grounds that it is vague and ambiguous in using undefined terms such as "release," "source of release," "amount of release," and "location of release." Olin also objects to the extent it calls for expert opinions before the date required for such opinions by the Revised Pretrial Schedule. Without waiving its objections, Olin further responds as follows:

(a) Releases from 1952 to January, 1964 that have caused, or may cause, the incurrence of response costs are listed below, by location.

Lake Poly

Pipes from yard drains and drains in Plants A, B and C carried process waters, wash waters, and other flows of liquids to Lake Poly. Lake Poly was unlined. Thus, liquids placed in Lake Poly seeped into the ground. Additionally, overflow from Lake Poly ran over the surface of the ground on the west side of the Plant and also entered the ditch system that ran along the west side of the Plant and cut across the Plant property south of the manufacturing facilities to the East Ditch.

Beginning in around 1954 and continuing through January, 1964, hazardous substances and/or materials used in or generated by the Opex manufacturing process were released into Lake Poly, in at least the following ways. First, effluent from the Opex manufacturing process was piped to Lake Poly. Second, wash water generated in weekly cleanings of Plant A carried hazardous substances and/or material used or created in the Opex manufacturing process to Lake Poly. Third, on at least one occasion, in 1954, a batch of unfinished Opex was piped to Lake Poly. Fourth, off-spec Opex was either dumped into Lake Poly or piped there from Plant A. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials that were released into the environment at Lake Poly by these means included sodium chloride, sodium nitrate, formaldehyde, ammonium chloride, processing oil, hydrochloric acid, hexamethylenetetramine, and Opex (dinitropentamethylenetetramine).

Additionally, beginning in 1956, and continuing until some time after the East-West Ponds were built, as late as July, 1957, an acidic effluent from the Kempore manufacturing process was piped to Lake Poly. From 1957 through January, 1964, wash water generated in daily washing of Plant C's floor and weekly cleanings of all of Plant C, carried hazardous substances and/or material used or created in the Kempore manufacturing process to Lake Poly. On at least one occasion, an off-spec batch of Kempore was flushed down the drain to Lake Poly. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials that were released into the environment at Lake Poly by these means included chromium sulfate, sodium dichromate, sulfuric acid, sodium sulfate, urea, ammonium sulfate and Kempore (azodicarbonamide).

Additional releases to Lake Poly of hazardous substances and/or materials, or compounds containing hazardous substances and/or materials, between 1954 and January, 1964, included:

- Drums of aluminum chloride were dumped into Lake Poly in 1963 or 1964.

- Throughout the period, acetone used for cleaning purposes in the laboratory and the plants was piped to Lake Poly after its use.

- From 1961 through January, 1964, phenol and formaldehyde wastes from the resin manufacturing process were piped to Lake Poly. Wash water from weekly cleanings of Plant B was also piped to Lake Poly containing these wastes, as well as hazardous substances and/or materials used or created in the plasticizer manufacturing process, at least through 1961, which included dioctylphthalate, dibutylphthalate, 2-ethylhexanol and butyl alcohol.

- From 1961 until January, 1964, dioctyldiphenylamine, aluminum chloride, aluminum hydroxide, sodium chloride and diisobutylene were piped to Lake Poly from the Wytox ADP manufacturing process.

- Periodically throughout the period from 1952 to January, 1964, drums containing a variety of hazardous substances and/or materials were dumped into Lake Poly.

East-West Ponds

Beginning in 1957, and continuing through January, 1964, an acidic effluent from the Kempore manufacturing process was piped to and released into the unlined East-West Ponds. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials released to the East-West Ponds in that effluent included chromium sulfate, sulfuric acid, sodium sulfate, urea, ammonium sulfate and Kempore.

Additionally, from 1963 through January, 1964, an acidic effluent containing sodium sulfate and sodium chloride was released into the East-West Ponds from the hydrazine manufacturing process in Plant C-3.

Other Releases

Other releases during the period from 1952 through January, 1964 included at least the following:

- From 1961 through January, 1964, dioctyldiphenylamine (DODPA a/k/a Wytox ADP) was routinely spilled onto the ground outside Plant B as the liquid produced from the reactor was being moved in pans to a drying or hardening area.

- From 1961 through January, 1964, effluent from the DODPA manufacturing process was released directly onto the ground outside Plant B. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials in that effluent included dioctyldiphenylamine, aluminum chloride, sodium chloride and diisobutylene.

- From 1961 through January, 1964, diisobutylene frequently overflowed from a tank in Plant B and ran out of the building onto the ground adjacent to it.

- In 1962 a batch of resin exploded and sprayed on the ground around Plant B. That material contained phenol and/or formaldehyde.

- From 1961 through January, 1964, dust from the resin grinding process escaped Plant B and settled on the ground adjacent to Plant B. This dust contained phenol and/or formaldehyde.

- From 1961 through January, 1964, pans in which resin was dried were cleaned outside Plant B and the residue from the cleaning process was poured onto the ground. The residue contained phenol and/or formaldehyde.

- From 1954 through January, 1964, waste materials of various types, including Opex, were incinerated South of Lake Poly and the residues were left on the ground.

- From 1954 or 1955 through January, 1964, periodic releases in the form of leaks or spills from the above-ground storage tanks located to the East of Plant B occurred. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials stored in the tanks included 2-ethylhexanol, butanol, oils, caustic, formaldehyde, diisobutylene and dibutylphthalate.

- Sometime between 1952 and 1968, a variety of hazardous substances and/or materials, or compounds containing hazardous substances and/or materials were buried at various locations around the Wilmington site, both in drums and unpackaged. Continued discovery may narrow-down the time period in which these substances and/or materials were buried. The locations of the drum burials and the identification of the hazardous substances and/or materials found at those locations can be found in Olin's Supplemental Phase II Report, June 1997 (at OW450587, et seq.). The burden of obtaining that information through an examination of that document is substantially the same for the Biltrite Companies as for Olin and, therefore, Olin refers the Biltrite Companies to that document, pursuant to Fed. R. Civ. P. 33(d).

(b) Releases from February, 1964 to August, 1980 that have caused, or may cause, the incurrence of response costs, are listed below, by location of release.

Lake Poly

From February, 1964 until September, 1969, the waste streams identified below continued to be sent to Lake Poly. The hazardous substances and/or materials, or compounds containing hazardous substances and/or materials contained in those streams, did not change from those identified in Supplemental Response 7(a), with the exception that, beginning in or around April, 1967, waste water from Plant C no longer contained chromium sulfate and instead contained sodium sulfate and sodium chloride.

- Effluent from the Opex manufacturing process.
- Waste water from the periodic cleanings of Plants A, B and C.
- Until 1966, wastes from the resin manufacturing process.
- Wastes from the Wytox ADP manufacturing process.

Additionally, between 1965 and 1967, process wastes from the Wiltrol-N manufacturing process were piped to Lake Poly, as were hazardous substances and/or materials used or created in the Wiltrol-N manufacturing process, when Plant C was washed down once a week. These included sodium nitrite, sulfuric acid, diphenylamine and N-Nitrosodiphenylamine.

Further, until at least 1967, acetone used for cleaning purposes in the laboratory and the plants was piped to Lake Poly after its use.

East-West Ponds

From February, 1964 until 1965 and/or 1966 when they were replaced, sequentially, with the unlined acid pits, the East-West Ponds continued to receive acidic effluent from the Kempore and hydrazine manufacturing processes. The effluent streams contained the hazardous substances and/or materials, or compounds containing hazardous substances and/or materials identified above in Supplemental Response 7(a), including chromium sulfate. Additionally, drums containing substances and/or materials not yet identified by Olin were placed into the East-West Ponds.

Unlined Acid Pits

From 1965 until December, 1971, when they were replaced by the first lined lagoon, the unlined acid pits received effluents from the Kempore and hydrazine manufacturing processes that had formerly been piped to the East-West Ponds. With the exception of chromium sulfate, which was not present in the Kempore effluent after April, 1967, and the additions of sodium sulfate and sodium chloride to the Kempore effluent after April, 1967, the hazardous substances and/or materials, or compounds containing hazardous substances and/or materials in those effluent streams remained the same. After July, 1971, these effluent streams were neutralized and treated for sulfate content.

Additionally, from the time of the closure of Lake Poly in 1969, the unlined acid pits also received all processing effluent from the Opex manufacturing process (until 1972), all processing effluent from the Wytox ADP manufacturing process (until 1971), and wastewater from periodic cleanings of Plants A, B and C (until 1972). Those waste streams contained the hazardous substances and/or materials, or compounds containing hazardous substances and/or materials, identified in Supplemental Response 7(a), except that after July 1971, these streams were neutralized and treated for sulfate content.

Other Releases

Other releases of hazardous substances and/or materials, or compounds containing hazardous substances and/or materials during the period from February, 1964 through August, 1980 included:

- Liquid dioctyldiphenylamine (DODPA a/k/a Wytox ADP) was routinely spilled onto the ground outside Plant B from February, 1964 until some time between 1967 and 1970.

- Between February, 1964 and 1971, diisobutylene periodically overflowed from a tank in Plant B and ran out of the building onto the adjacent ground.

- From February, 1964 to 1966, dust from the resin grinding process escaped Plant B and settled on the ground adjacent to Plant B. This dust contained phenol and/or formaldehyde.

- From February 1964 through 1966, pans in which resin was dried were cleaned outside Plant B and the residue from the cleaning process was poured onto the ground. The residue contained phenol and/or formaldehyde.

- In 1965 or 1966, two batches of resins exploded and sprayed material on the ground around the exterior of Plant B. That material contained phenol and/or formaldehyde.

- In 1965, a tank of diphenylamine in the Plant B area tank farm ruptured and released its contents to the ground.

- Between 1965 and 1968, dust from the fertilizer plant operated by PATCO in the eastern-most warehouse settled onto the ground outside the warehouse. That dust contained urea.

- From 1965 until 1971, effluent from the Wytox ADP process containing dioctyldiphenylamine, aluminum chloride, aluminum hydroxide, sodium chloride and diisobutylene was released into an open ditch running from Plant B to the East Ditch.

- From 1964 to 1965, on at least five to twelve occasions, azodiisobutyronitrile was spilled to the ground at the warehouse, either from containers being unloaded or from the loading dock. The material was left to the elements.

- Sometime between 1952 and 1968, a variety of hazardous substances and/or materials, or compounds containing hazardous substances and/or materials were buried at various locations around the Wilmington site, both in drums and unpackaged. Continued discovery may reveal the dates on which these substances and/or materials were buried. The locations of the drum burials and the identification of the hazardous substances and/or materials found at those locations can be found in Olin's Supplemental Phase II Report, June 1997 (at OW450587, et seq.), in accordance with Fed. R. Civ. P. 33(d).

- The recent Phase II Investigation of the Wilmington Site has identified the presence of pesticides in several locations around the Site. These locations are identified in Olin's Supplemental Phase II Report, June 1997. That report has been produced to the parties in this action. Documents produced by Fisons plc suggest that pesticides were shipped to Fisons Corporation at the Wilmington site by Fisons Ltd. or a subsidiary in the 1966 to 1970 period.

Olin has no knowledge of releases during the period from 1968 to 1980 other than those identified above. To the extent Olin has information regarding such possible releases, it is from deposition testimony and accompanying exhibits. The Biltrite Companies are as familiar with that deposition testimony and those exhibits as is Olin, and Olin refers the Biltrite Companies to them, pursuant to Fed. R. Civ. P. 33(d). Olin reserves all of its rights with respect to such testimony.

Documents not previously identified in Olin's Answers that provide information regarding the facts presented in Supplemental Responses 7(a) and 7(b) include: The Badger Pollution Control Study (OW017576-618); Site Plot Plan (OW000694); Blueprint, December 6, 1957 (OW001072); Blueprint, February 9, 1960 (OW001160); Blueprint, March 30, 1961 (OW373798); Blueprint, April 13, 1954 (OW373792); Kempore Filter Press, July 12, 1957 (HP00663-671); Operating Procedure - Product A, March 5, 1958 (HP00526-538); Blueprint, November 7, 1952 (OW373805); June 26, 1956 Site Photo (OW104043A); 1958 Insurance Plot Plan (OW1161); 1961 Insurance Plot Plant (OW373804); September 13, 1969 Site Photo (OW104081); 1967 Site Photo (OW014676A; 9/7/72 Letter from R. McBrien to Wilmington Town Manager (OW009629-631); 4/5/73 Letter from R. Williams to District Sanitary Engineer (OW009890-891); 8/17/71 Letter from Water Resources Commission to R. McBrien and Response (OW003015-016); 4/1/65 Letter from J.S. Walker to Osberg (OW008674-687); 9/15/66 Document from CPR to Dave (OW008627-628); Operating Procedure - BIOP, 7/19/58 (HP00615-623); Contract for Sale of Resin Business, 3/9/66 (BDG002427); Drum Burial Questionnaire (OW005317-367); 9/19/67 Herbicide Marketing Proposal (BDG011144-158); 8/23/67 Letter from F.R. Johnson to D.T. Smith (BDG011257); 9/19/67 Agricultural Division Progress Report (BDG011258-260); 9/19/67 Fisons Corp. Annual Board Meeting Minutes (JMW05105-116); 2/3/67 Fisons Corp. Board Minutes (2000107-117); 9/19/67 Fisons Corp. Board Minutes (3001379-389); 11/1/67 Agricultural Chemical Division Progress Report (3001459-461); 8/23/67 Letter to D. Smith from F. Johnson (JMW05024); 9/67 Agricultural Chemical Division Progress Report (JMW05025-027); 12/15/67 Agricultural Chemical Division Progress Report (JMW05365-366); 2/68 Agricultural Chemical Division Progress Report (JMW05443-445); 2/8/68 Agricultural Chemical Division Budget Review (JMW05460-467); 4/68 Agricultural Chemical Division Progress Report (JMW05588-593); 7/22/68 (JMW05782-785). Both these documents and the documents identified in Olin's Answers have been produced to the Biltrite Companies previously. Both sets of documents contain additional information responsive to this interrogatory request. For that information, Olin refers the Biltrite Companies to those documents pursuant to Fed. R. Civ. P. 33(D), because the burden of examining those documents is substantially the same for the Biltrite Companies as for Olin.

Persons who know, or may know, about these facts, including deponents, are identified in Olin's Supplemental Response to Interrogatory No. 8 below.

Discovery is still underway. Olin will identify additional relevant facts, documents and individuals with knowledge when and as required by the Federal Rules of Civil Procedure.

Interrogatory No. 8: Identify all persons with knowledge of:

(a) any fact relied on in your response to each of the foregoing interrogatories;

(b) any fact asserted or alleged in the Complaint filed by Olin in this action;

(c) the environmental condition of the Wilmington plant, including any fact concerning the environmental condition of the Wilmington plant; and

(d) Olin's reports and disclosures to regulatory agencies concerning the environmental condition of the plant.

Response: Olin incorporates its previous response to this interrogatory by reference. Further, Olin continues to object to this interrogatory on the grounds that it is vague and ambiguous in not defining "any fact asserted or alleged," "environmental condition," "fact concerning the environmental condition," "regulatory agencies" and "disclosures." Without waiving its objections, Olin further responds as follows:

(a) and (b) Appendix C has been revised to list persons presently known to Olin with knowledge of facts relied on in both Olin's Answers and these Supplemental Answers, as well as facts asserted or alleged in the complaint filed by Olin in this action.

Appendix D has been revised to list persons presently known to Olin who may have knowledge of facts regarding the plant.

(c) and (d) An additional person who has knowledge of environmental conditions at the Plant and of Olin's reports and disclosures to regulatory agencies is M. Margaret Hanley of GEI Consultants, Inc. Ms. Hanley was recently retained by Olin as a Licensed Site Professional and consultant regarding the Wilmington Plant.

Interrogatory No. 10: State the total amount of damages, including response costs and interest, Olin seeks to recover in this action; identify each response action which you allege Olin has undertaken at the Wilmington plant site, including a description of the nature of the work performed and the identity of the entities or individuals who performed the work; and state the amount of costs you seek to recover for each such response action.

Response: Olin incorporates its previous response to this interrogatory by reference. Further, Olin continues to object to this interrogatory on the grounds that it is vague and ambiguous in not defining "the nature of the work performed" and the "entities or individuals who performed the work." Without waiving its objections, Olin further responds as follows:

With respect to investigation activities, additional firms involved include Groundwater Technology, Gately Construction Co., E.C. Jordan Co., Soil Exploration Corp., and C.E. Environmental Services.

Documents that have been provided to all parties regarding expenditures at the site, in addition to those identified in Olin's Answers, include documents at OW507777-510085; OW520209-520500; OW516652-516915; OW519069-519160; OW519250-519785; OW592851-592981; OW593288-593535; OW607519-610214. The burden of obtaining information from those documents, including those previously identified, is the same for the Biltrite Companies as for Olin and, therefore, Olin refers the Biltrite Companies to those documents, pursuant to Fed. R. Civ. P. 33(d).

As to Objections:

OLIN CORPORATION

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Date: January 30, 1998

VERIFICATION

I, Thomas P. O'Brien, Manager, Environmental Sites, Olin Corporation, state that I have read the foregoing Supplemental Answers of Olin to the Biltrite Companies' First Interrogatories, that the answers include information not known to me personally, that I have relied on others to obtain such information not known to me personally, and that the answers contained therein are true to the best of my knowledge, information and belief.

Executed under penalty of perjury on this 30th day of January, 1998.

Thomas P. O'Brien

Thomas P. O'Brien

CERTIFICATE OF SERVICE

I hereby certify that on this 30th day of January, 1998, I served a copy of Plaintiff Olin Corporation's Supplemental Objections and Answers to Defendants The Biltrite Corporation and American Biltrite Inc.'s First Set of Interrogatories, by first class mail, postage prepaid, to Defendants' counsel of record, Robert G. Jones, and to all other Counsel of Record.

Charles Swinburn

ATTACHMENT 6

Constituents Found in "Business Records and Correspondence" in Geomega's Files

(Shaded records denote existing PCOCs)

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
#6 oil		Unknown	Unknown	Oils used at Wilmington	N	
1,1'Azobisformamide		Unknown	Unknown	NP Wilmington List	N	
1,2 Dichloroethane		Unknown	Unknown	OW 023181	N	
1,2,4 Triazole		Product	Unknown	Wilmington Finished Goods	N	
1-Nitropropane		Unknown	Unknown	OW 373720 Stepan Technical Information	N	
2,6 di-tert-butylphenol		Unknown	Unknown	OW 797568	N	
2,6,B		Unknown	Unknown	OW 797361	N	
201-C Resin		Product	Pre	OW 373719-M Production Summary	N	
201-F Resin		Product	Pre	Wilmington Finished Goods	N	
202-C Resin		Product	Pre	OW 373719-M Production Summary	N	
202-F Resin	cashew nut oil	Product	Pre	OW 373719-M Production Summary	N	
218-C Resin		Product	Pre	OW 373719-M Production Summary	N	
218-F Resin		Product	Pre	OW 373719-M Production Summary	N	
222-P Resin		Product		OW 1285-1339	N	
2-ethylhexanol		Raw	Pre	Table 2.2 from CSA	Y	104-76-7
2-ethylhexoic acid	Octanoic acid	Raw	Pre	OW 021018 List of Raw materials	Y	00149-57-5
2-MT Lever		Product	Pre	AB 04322 Unit Summary	N	
2-nitrophenol		Unknown	Unknown	OW 023180 Olin memo	N	
3,3-thiodipropionic acid		Raw	Unknown	OW 005215	N	
3-Amino 1,2,4 Triazole		Product	Unknown	OW 797474	N	
4,4 oxybisbenzenedisulfonylhydrazide		Product	Pre	Table 2.2 from CSA	Y	
4-Amino-1,2,4 Triazole		Coproduct	Unknown	OW 797464	N	
4-aminourazole		Unknown	Unknown	OW 023366 Olin	N	
598 Oil		Unknown	Unknown	OW 1285-1339	N	
5-Aminotetrazone		Unknown	Unknown	OW 797339	N	
5-Phenyltetrazole	Expandex 5-PT	Product	Pre	Wilmington Finished Goods	Y	18039-42-4
Accel MBTS		Product	Pre	AB 04322 Unit Summary	N	
Acetone	acetone filtrate	Unknown	Unknown	Wilmington Raw Materials sheet 2	Y	00067-64-1
acetone filtrate	acetone				N	
Acetone Semicarbazone		Product	Unknown	Wilmington Finished Goods	N	
Acetonitrile		Unknown	Unknown	OW 373720 Stepan Technical Information	N	
Acrylic Resins		Raw	Unknown	Table 2.2 from CSA	Y	
Acryloid K-120N		Unknown	Unknown	Wilmington Raw Materials sheet 2	N	
Actafoam F-2 paste		Product	Unknown	Wilmington Finished Goods	N	
Actafoam F-2 powder		Product	Unknown	Wilmington Finished Goods	N	
Actafoam R-1		Product	Unknown	OW 005211 Olin memo	N	
Actafoam R-10		Product	Unknown	OW 567715 Olin ltr	N	
Actafoam R-3		Product	Unknown	Wilmington Finished Goods	N	
Actafoam R-5		Product	Unknown	OW 005211 Olin memo	N	

0041-0136

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Actafoam XR-16		Product	Unknown	Wilmington Finished Goods	N	
Actafoam XR-34		Product	Unknown	Wilmington Finished Goods	N	
Additive W		Product	Unknown	Wilmington Finished Goods	N	
Adipic Acid	Hexanedioic acid; 1,4-butane-dicarboxylic	Unknown	Unknown	OW 093469 Olin Memo	Y	00124-04-9
Adipic dihydrazide		Product	Unknown	Wilmington Finished Goods	N	
Aerosol M-35		Product	Pre	AB 04322 Unit Summary	N	
Alkyl Phenol					Y	68555-24-8
Alkylated diphenylamine		Unknown	Unknown	NP Wilmington List	N	
Aluminum		Waste	Unknown	GEO 25377 Deposition Exhibit	Y	7429-90-5
Aluminum Chloride		Raw	Pre	Table 2.2 from CSA	Y	07446-70-0
Aluminum Hydroxide		Waste/Byproduct	Pre	Table 2.2 from CSA	Y	21645-51-2
Aminoguanidine Bicarbonate	AGB	Unknown	Unknown	OW 797339	N	
Ammonia		Raw	Pre	OW 021018 List of Raw materials	Y	7664-41-7
Ammonium Chloride		Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	Y	12125-02-9
Ammonium Hydroxide		Raw	Unknown	OW 021018 List of Raw materials	Y	01336-21-6
Ammonium salts of Alkylphosphate	Aquarex L; Anionic surfactant	Raw	Unknown	OW 005200 Olin Memo	Y	
Ammonium Sulfate		Waste/Byproduct	Pre	Table 2.2 from CSA	Y	7783-20-2
Ammonium Thiocyanate	Ammonium sulfocyanate	Unknown	Unknown	OW 797273	Y	01762-95-4
Anhydrous Ammonia	ammonia	Raw	Unknown	OW 005200 Olin Memo	N	
Aniline	aminobenzene	Unknown	Unknown	OW 1285-1339	Y	00062-53-3
Antidust 1060		Product	Unknown	Wilmington Finished Goods	N	
Antidust 1060N		Product	Pre	AB 04322 Unit Summary	N	
Aquard 25;75		Unknown	Unknown	OW 005200 Olin Memo	N	
Asbestos		Waste	Unknown	OW 021839 Annual Report	Y	1332-21-4
AZDN FF		Product	Unknown	Wilmington Finished Goods	N	
AZDN LC dry		Product	Unknown	Wilmington Finished Goods	N	
AZDN Lm dry		Product	Unknown	Wilmington Finished Goods	N	
Azobisisobutyronitrile		Unknown	Unknown	OW 005200 Olin Memo	N	
Azodicarbonamide	Kempore	Raw & Product	Pre	Table 2.2 from CSA	Y	123-77-3
azone		Unknown	Unknown	OW 023366 Olin	N	
Barium azocarbonate	Expandex 177	Product	Unknown	OW 006285 Olin	N	
Barium Chloride		Unknown	Unknown	Wilmington Raw Materials sheet 2	Y	10361-37-2
Barium oxide		Raw	Unknown	OW 022668	N	
Bentone		Raw	Unknown	Table 2.2 from CSA	Y	
Benzaldehyde		Unknown	Unknown	OW 795562	Y	00100-52-7

0041-0137

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Benzene	Benzol	Waste	Unknown	OW 021839 Annual Report	Y	00071-43-2
Benzene-sulfonyl-hydrazide	4,4-Oxybis				Y	80-51-3
Benzonitrile	cyanobenzene, phenyl cyanide	Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	100-47-0
Benzophenone	diphenyl ketone	Unknown	Unknown	OW 093469 Olin Memo	Y	00119-61-9
Benzophenone Hydrazone		Product	Unknown	Wilmington Finished Goods	N	
BHC		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Bichromate		Unknown	Unknown	OW 1285-1339	N	
Bis(2-ethylhexyl) phthalate	Dioctyl phthalate, DOP; di(2-ethylhexyl) phthalate	Raw & Product	Pre	Table 2.2 from CSA	Y	00117-81-7
Borden's B-38		Unknown	Unknown	OW 1285-1339	N	
Boric Acid	Boracic acid; orthoboric acid; borofax	Unknown	Unknown	Wilmington Raw Materials sheet 2	N	
Butanol	see also butyl alcohol, n-butanol	Raw	Unknown	OW 021018 List of Raw materials	N	
Butyl alcohol	see also butanol, n-butanol	Raw	Pre	Table 2.2 from CSA	Y	00071-36-3
Butylacetate		Raw	Unknown	Table 2.2 from CSA	Y	00105-46-4
Cabosil		Unknown	Unknown	OW 1285-1339	N	
Cadmium octate		Raw	Unknown	OW 005200 Olin Memo	N	
Cadmium oxide		Raw	Unknown	OW 005211 Olin memo	Y	01306-19-0
calcium		Unknown	Unknown	Severn Trent Results 1998	N	
Calcium Carbonate		Unknown	Unknown	OW 009953 NP letter	Y	471-34-1
Calcium Chloride		Unknown	Unknown	OW 009953 NP letter	Y	10043-52-4
Calcium Oxide		Unknown	Unknown	OW 567715 Olin ltr	Y	1305-78-8
Calcium oxybisbenzene sulfonate		Unknown	Unknown	OW 009953 NP letter	N	
Calcium Silicate	Microcel-E	Unknown	Unknown	OW 005200 Olin Memo	Y	1344-95-2
Calcium Stearate		Raw	Unknown	OW 005200 Olin Memo	Y	1592-23-0
Carbohydrazide	1,3-diaminourea; carbazide	Product	Unknown	Wilmington Finished Goods	Y	497-18-7
Carbon Black		Product	Pre	AB 04322 Unit Summary	N	
carbon dioxide		Unknown	Unknown	OW 1285-1339	N	
carbon disulfide		Unknown	Unknown	OW 798061	N	
Carboxymethylcellulose		Unknown	Unknown	OW 005200 Olin Memo	N	
Cashew nut oil		Raw	Unknown	OW 005200 Olin Memo	N	
Caustic soda flake		Unknown	Unknown	OW 1285-1339	N	
Chlordane		Pesticide	Unknown	Sheet on Pesticides used at Olin	N	
Chlorine		Raw	Pre	Table 2.2 from CSA	Y	07782-50-5
Chlorosulfonic acid		Raw	Pre	Table 2.2 from CSA	Y	07790-94-5

0041-0138

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Cho-ox 4	Thibisbenzaldehydepropanyl hydrazone	Unknown	Unknown	OW 797563	N	
chrome sulfate		Waste/Byproduct	Unknown	Table 4-14	N	
Chromium		Unknown	Unknown	Phase I Site Inspection (2nd)	N	
Cirasol oil		Unknown	Unknown	Oils used at Wilmington	N	
CNSL		Unknown	Unknown	OW 1285-1339	N	
copper		Unknown	Unknown	OW 023182	N	
COS-60		Product	Unknown	Wilmington Finished Goods	N	
CSA		Unknown	Unknown	Wilmington Raw Materials sheet 2	N	
Cumarone Resin		Product	Pre	AB 04322 Unit Summary	N	
cyanide	see hydrogen cyanide	Waste	Unknown	OW 030048 waste report	N	
Cyanox flakes		Product	Unknown	Wilmington Finished Goods	N	
Cyanox powder		Product	Unknown	Wilmington Finished Goods	N	
Cyclohexanol		Waste	Unknown	OW 021839 Annual Report	N	
Darvan-L		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
Darvanol		Raw	Unknown	OW 021018 List of Raw materials	N	
Daxad		Unknown	Unknown	OW 1285-1339	N	
DDD		Pesticide	Unknown	Sheet on Pesticides at Olin	N	
DDE		Pesticide	Unknown	Sheet on Pesticides at Olin	N	
DDT		Pesticide	Unknown	Sheet on Pesticides at Olin	N	
dedusting oil		Unknown	Unknown	Oils used at Wilmington	N	
Deetac	NP 27	Product	Unknown	Wilmington Finished Goods	N	
Deodorant 1056		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
Di(2-ethylhexyl)phthalate	bis(2-ethylhexyl)phthalate, DOP, dioctyl phthalate	Product	Unknown	National Polychemicals, Inc.	N	
Di(C7-9-11 Alkyl) phthalate	1,2-benzenedicarboxylic acid; Santicizer 711	Raw	Unknown	OW 021018 List of Raw materials	Y	39393-37-8
DIB		Unknown	Unknown	OW 005211 Olin memo	N	
dicarboxyhydrazide amide		Unknown	Unknown	OW 023366 Olin	N	
Dihydrazide		Unknown	Unknown	OW 797561	N	
Dihydrazine sulfate		Unknown	Unknown	HP 00654 K-1 operating	N	
Diisobutylene	2,2,4 trimethylpentene	Raw	Pre	Table 2.2 from CSA	Y	25167-70-8
Dimethyl Carbonate		Unknown	Unknown	OW 005200 Olin Memo	Y	616-38-6
Dimethyl Formamide		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	
Dimethylphenol				ltr from Stepan	N	
Di-n-butyl phthalate		Product	Pre	Table 2.2 from CSA	Y	00084-74-2
Dinitrosopentamethylenetetramine	Opex	Product	Pre	Table 2.2 from CSA	Y	101-25-7
Di-nonylphenol	2,4 dinonylphenol, DVP	Raw	Pre	OW 021018 List of Raw materials	Y	
Dioctyl Diphenylamine		Unknown	Unknown	BDG 000006	Y	
Dioctylphthalate		Unknown	Unknown	OW 210384 Olin Memo		
Diphenyl amine		Raw	Pre	Table 2.2 from CSA	Y	00122-39-4

0041-0139

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
diphenyl methanol		Unknown	Unknown	OW 023366 Olin	N	
Diphenyl oxide	DPO??	Raw	Pre	Table 2.2 from CSA	Y	
diphenyl-4-4'disulfonyl		Unknown	Unknown	OW 797589	N	
diphenyl-4-4'disulfonyl		Unknown	Unknown	OW 797589	N	
DMTDH		Unknown	Unknown	OW 797562	N	
DMTDP	Dimethyl thiodipropionate	Unknown	Unknown	OW 797562	N	
DOEMEGAN		Unknown	Unknown	OW 797605	N	
Drakeol #35 oil		Unknown	Unknown	OW 005200 Olin Memo	N	
Elten		Product	Pre	AB 04322 Unit Summary	N	
Endosulfan		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Endrin		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Endrin Ketone		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Ethemeen		Unknown	Unknown	OW 005200 Olin Memo	N	
Ether		Unknown	Unknown	OW 797581	N	
Ethyl acetate	Ethyl Ethanoate, Acetic Ester	Unknown	Unknown	OW 030048 waste report	Y	00141-78-6
Ethyl Acetoacetate		Unknown	Unknown	OW 373720 Stepan Technical Information	N	
Ethylene glycol	1,2-Thanediol	Unknown	Unknown	OW 005200 Olin Memo	N	
Ethylene oxide		Unknown	Unknown	OW 797613	N	
Fast Spermoil		Raw	Unknown	Oils used at Wilmington	N	
Fatty amines		Raw	Unknown	Table 2.2 from CSA	Y	
Ficel AC3F		Product	Unknown	Wilmington Finished Goods	N	
Ficel CRA		Product	Unknown	Wilmington Finished Goods	N	
Fl-Guard		Unknown	Unknown	3000105 1964 ltr	N	
Fisons DNPT 80		Unknown	Unknown	Technical News FL-13085	N	
Formaldehyde		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	00050-00-0
Formamide	Methanamide, carbamaldehyde	Unknown	Unknown	OW 005200 Olin Memo	N	
Formic acid		Unknown	Unknown	OW 1285-1339	N	
Fransil 251		Product	Pre	AB 04322 Unit Summary	N	
Glycerine	Glycerol; 1,2,3-propanetriol	Raw	Unknown	OW 021018 List of Raw materials	Y	00056-81-5
Glycol Ethers	glycol monethyl ether	Unknown	Unknown	OW 005200 Olin Memo	Y	00110-80-5
Hardener	S-7087	Product	Unknown	Wilmington Finished Goods	N	
HBr	Anhydrous hydrobromic acid??	Unknown	Unknown	OW 005211 Olin memo	N	
HCL AQ		Waste/Byproduct	Unknown	Table 4-14	N	
Heavy White Oil		Raw	Unknown	OW 021018 List of Raw materials	N	
Heptachlor		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Heptachlor epoxide		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Hexamethylenetetramine	Hexamine; Methenamine	Raw	Pre	Table 2.2 from SCA	Y	100-97-0
Hexane		Raw	Unknown	OW 021018 List of Raw materials	N	
Hexylene Glycol		Raw	Unknown	OW 021018 List of Raw materials	Y	00107-41-5

0041-0140

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Hisil 233		Unknown	Unknown	OW 567715 Olin ltr	N	
Hydrazine	see hydrazine hydrate	Raw & Product	Pre	OW 021018 List of Raw materials	Y	00302-01-2
hydrazine hydrate	see hydrazine	Unknown	Unknown	OW 797586	N	
Hydrazodicarbonamide	Urazole; 1,2,4-triazolidine; 3,5-dione; bicarbaminide				Y	3232-84-6
Hydrochloric acid		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	07647-01-0
Hydrogen Cyanide in Aq. Solution	Cyanide	Waste	Unknown	OW 030048 waste report	Y	00057-12-5
Hydrogen Peroxide		Unknown	Unknown	Wilmington Raw Materials sheet 2	Y	07722-84-1
Indupol H-100		Unknown	Unknown	OW 1285-1339	N	
Indusoil		Unknown	Unknown	HP 00548	N	
Inks		Unknown	Unknown	OW 005200 Olin Memo	N	
Iron		Unknown	Unknown	Severn Trent Results 1998	N	
Isooctyl alcohol		Raw	Unknown	BIOP HP 00615	N	
Isophthalic acid	1,3-Benzenedicarboxylic acid				Y	121-91-5
Kempore "B"		Product	Unknown	OW 1285-1339	N	
Kempore 117		Product	Unknown	OW 1285-1339	N	
Kempore 125		Product	Pre	AB 04322 Unit Summary	N	
Kempore 125A		Product	Unknown	OW 009047	N	
Kempore 125FF		Product	Unknown	Wilmington Finished Goods	N	
Kempore 125HS		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 125LP		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 125-MC		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 150		Product	Pre	AB 04322 Unit Summary	N	
Kempore 200		Product	Pre	Wilmington Finished Goods	N	
Kempore 200FF		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 200MC		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 60		Product	Unknown	Wilmington Finished Goods	N	
Kempore 60/14		Product	Unknown	Wilmington Finished Goods	N	
Kempore 60/14 MC		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 60/14 XL		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 60/14FF		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 80					N	
Kempore BA-101		Product	Unknown	OW 1285-1339	N	
Kempore HDCA		Product	Unknown	OW 567715 Olin ltr	N	
Kempore HDCI		Product	Unknown	OW 025792	N	
Kempore K-1		Product	Unknown	HP00653 Operating procedure	N	
Kempore R-125		Product	Unknown	AB 04322 Unit Summary	N	
Kempore SD-125		Product	Pre	Wilmington Finished Goods	N	
Kempore SD-150		Product	Pre	OW 373719-M Production Summary	N	
Kempore SD-200		Product	Pre	Wilmington Finished Goods	N	
Kempore SD-200/EPO		Product	Unknown	Wilmington Finished Goods	N	
Kempore SD-60		Product	Pre	Wilmington Finished Goods	N	

0041-0141

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Kempore SDA-200		Product	Unknown	Wilmington Finished Goods	N	
Kempore UD					N	
KSP		Unknown	Unknown	OW 1285-1339	N	
K-tert-butoxide		Unknown	Unknown	OW 797580	N	
L-115 Resin		Product	Unknown	OW 1285-1339	N	
L-118-A Resin		Product	Unknown	OW 1285-1339	N	
L-119 Resin		Product	Unknown	OW 1285-1339	N	
L-303 Resin		Unknown	Unknown	OW 1285-1339	N	
lauryl alcohol		Byproduct	Unknown	OW 006285 Olin	N	
Lead octate		Raw	Unknown	OW 005200 Olin Memo	N	
LiH		Raw	Unknown	OW 797361	N	
Lime slurry	Lime	Raw	Unknown	OW 021018 List of Raw materials	N	
Liqro		Unknown	Unknown	Olin 1983 Aug. 30 memo	N	
Liquid DPA		Raw	Unknown	OW 1285-1339	N	
Magnesia 30-C		Product	Pre	AB 04322 Unit Summary	N	
Magnesia 5		Product	Pre	AB 04322 Unit Summary	N	
Magnesium		Unknown	Unknown	Severn Trent Results 1998	N	
Maleic anhydride		Raw	Unknown	Table 2.2 from CSA	Y	00108-31-6
Manganese		Unknown	Unknown	Severn Trent Results 1998	N	
Maple Resin		Product	Pre	AB 04322 Unit Summary	N	
MEA		Raw	Unknown	OW 005211 Olin memo	N	
melathane		Product	Unknown	Wilmington Finished Goods	N	
Mercury		Unknown	Unknown	OW 023181	Y	07439-97-6
Methanol	alcohol	Raw	Unknown	OW 021018 List of Raw materials	Y	00067-56-1
Methoxychlor		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Methyl acrylate		Unknown	Unknown	OW 797578	N	
methyl carbazate		Unknown	Unknown	OW 797586	N	
Methyl Ethyl Ketone	2-Butanone	Unknown	Unknown	OW 373720 Stepan Technical Information	Y	00078-93-3
methyl glucoside		Unknown	Unknown	OW 797579	N	
Mineral Oil, Mineral Seal Oil		Raw	Unknown	OW 021018 List of Raw materials	Y	
Mineral Spirits		Raw	Unknown	OW 021018 List of Raw materials	Y	08030-30-6
Mixture of Silicone and Emulsions	CNC Antifoam 100	Raw	Unknown	OW 021018 List of Raw materials	Y	
Monochlorourea		Unknown	Unknown	OW 793233	N	
Monoethanolamine	2-aminoethanol	Raw	Unknown	OW 021018 List of Raw materials	Y	00141-43-5
Monohydrazine		Unknown	Unknown	OW 1285-1339	N	
monohydrazine sulfate	MHS	Unknown	Unknown	HP 00654 K-1 operating	N	
Morpholine		Unknown	Unknown	OW 373720 Stepan Technical Information	Y	00110-91-8
Muriatic acid		Raw	Unknown	OW 005200 Olin Memo	N	

0041-0142

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
N,N-Dimethylformamide	DMF	Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	00068-12-2
Napol		Product	Unknown	Wilmington Finished Goods	N	
Natrasol		Unknown	Unknown	OW 005200 Olin Memo	N	
NBA		Raw	Unknown	OW 797361	N	
n-butanol	see also butanol, butyl alcohol	Unknown	Unknown	OW 093469 Olin Memo	N	
NC 1978		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 3363		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 4676		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 4780		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 5016		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 5651		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 6583		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 6627		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NEV Paradine #2 Resin		Product	Pre	AB 04322 Unit Summary	N	
NEV R-16 Resin		Product	Pre	AB 04322 Unit Summary	N	
NEV R-29 Resin		Product	Pre	AB 04322 Unit Summary	N	
N-Heptane	Heptane	Raw	Unknown	OW 005200 Olin Memo	Y	00142-82-5
Nitric Acid					Y	07697-37-2
Nitrogen		Unknown	Unknown	OW 009680	Y	7727-37-9
nitrogen trichloride		Unknown	Unknown	B06000004 Fisons Limited	N	
Nitropore ATA		Product	Unknown	Wilmington Finished Goods	N	
Nitropore OT		Product	Pre	Table 2.2 from CSA	N	
Nitropore RP-10		Product	Unknown	OW 567715 Olin ltr	N	
N-Nitrosodiphenylamine	Wiltron N	Product	Pre	Table 2.2 from CSA	Y	00086-30-6
Nonylpheriol		Raw	Pre	OW 021018 List of Raw materials	Y	25154-52-3
Nopco 1444-B		Unknown	Unknown	Deposition Exhibit 1979 date	Y	25154-52-3
NP061 Resin		Product	Unknown	OW 1285-1339	N	
NPH-15		Unknown	Unknown	OW 1285-1339	N	
NPI-11		Product	Unknown	Wilmington Finished Goods	N	
NPS-201C		Product	Unknown	Wilmington Finished Goods	N	
NP-SAL-1		Raw	Unknown	HP 00527	N	
Nuostabe V1444		Raw	Unknown	OW 021018 List of Raw materials	N	
Nurothane		Unknown	Unknown	OW 1285-1339	N	
OBSA		Unknown	Unknown	OW 797589	N	
OBSH	4-4'oxybisbenzenedisulfonyl hydrazide; Nitropore OBSH	Product	Unknown	Wilmington Finished Goods	N	
Octadecanol		Raw	Unknown	OW 797361	N	

0041-0143

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Oleic acid		Raw	Unknown	Poly Brite HP 00562	N	
Opex	Product A; dinitrosopentamethylene tetramine	Product	Pre	OW 373719-M Production Summary	N	
Opex 100		Product	Unknown	Wilmington Finished Goods	N	
Opex 40		Product	Pre	AB 04322 Unit Summary	N	
Opex 42		Product	Unknown	Wilmington Finished Goods	N	
Opex 80		Product	Unknown	Wilmington Finished Goods	N	
Opex 93		Product	Unknown	Wilmington Finished Goods	N	
Opex PL-80		Product	Pre	AB 04322 Unit Summary	N	
Opex SBA		Product	Unknown	OW 1285-1339	N	
Opex-4X		Product	Unknown	HP 00527	N	
Opex-RPC		Product	Unknown	AB 04322 Unit Summary	N	
Opex-XBA		Product	Unknown	AB 04322 Unit Summary	N	
Oxalic acid	Ethanedioic acid	Raw	Unknown	OW 005200 Olin Memo	N	
Oxalic Dihydrazide	Semioxamazide, Aminooxoacetic acid, hydrazide, oxamic acid hydrazide				Y	515-96-8
Oxybisbenzenesulfonyl chloride	OBSC	Product	Unknown	Wilmington Finished Goods	N	
Para Toluene Sulfonic Acid water	PTSA	Raw	Unknown	OW 005200 Olin Memo	Y	6192-52-5
Paraformaldehyde	Paraform	Raw	Unknown	OW 005200 Olin Memo	Y	30525-89-4
Paraplex		Unknown	Unknown	Deposition Exhibit 1979 date	N	
PBNA	NP-20; 20-N	Product	PRe	AB 04322 Unit Summary	N	
PC oil		Unknown	Unknown	Oils used at Wilmington	N	
Phenol		Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	Y	00108-95-2
Phenol formaldehyde Resin		Product	Pre	Table 2.2 from CSA	N	
Phosphorus Trichloride		Raw	Pre	OW 021018 List of Raw materials	Y	07719-12-2
Phthalate Ester		Unknown	Unknown	OW 567719	N	
Phthalic Anhydride	Phthalandione; Wiltrol P	Unknown	Unknown	OW 005200 Olin Memo	Y	00085-44-9
Poly brite 600		Product	PRe	AB 04322 Unit Summary	N	
Poly Brite PE 20		Product	Pre	AB 04322 Unit Summary	N	
Poly Brite W10		Product	Pre	AB 04322 Unit Summary	N	
Poly Sperse AP-2		Product	Pre	AB 04322 Unit Summary	N	
Poly Sperse AP-300		Product	Pre	AB 04322 Unit Summary	N	
Poly Sperse LC-20		Product	Pre	AB 04322 Unit Summary	N	
Poly Sperse R-100		Product	Pre	AB 04322 Unit Summary	N	
Poly-BUT 66-6		Unknown	Unknown	OW 1285-1339	N	

0041-0144

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
polychlorinated biphenyls		Waste	Unknown	OW 030047	N	
Polycone 1000		Product	Pre	AB 04322 Unit Summary	N	
Polycone 100X		Product	Pre	AB 04322 Unit Summary	N	
Polycone 125X		Product	Pre	AB 04322 Unit Summary	N	
Polycone 2000		Product	Pre	AB 04322 Unit Summary	N	
Polycone 500		Product	Pre	AB 04322 Unit Summary	N	
Polycone 5000		Product	Pre	OW 373719-M Production Summary	N	
Polycone Le 46 150x		Product	Unknown	Wilmington Finished Goods		
Polycone M-35 oil		Product	Pre	AB 04322 Unit Summary	N	
Polycone ORG 22		Product	Pre	AB 04322 Unit Summary	N	
Polycone XSP		Product	Pre	AB 04322 Unit Summary	N	
Polyethylene		Waste	Unknown	OW 021839 Annual Report	N	
Poly-Lube		Product	Unknown	Unit Summary???	N	
Polymag 500		Product	Pre	AB 04322 Unit Summary	N	
polymeric alkylated phenol		Waste	Unknown	OW 030046 Waste Report	N	
Polymyke		Product	Pre	AB 04322 Unit Summary	N	
PolyPeg E		Product	Unknown	Wilmington Finished Goods	N	
Polyphen 188					N	
Polyphen L-305		Product	Unknown	OW 1285-1339	N	
Polyphen S-201-C		Product	Pre	AB 04322 Unit Summary	N	
Polyphen S-202-C		Product	Pre	AB 04322 Unit Summary	N	
Polyphen S-202-F		Product	Pre	AB 04322 Unit Summary	N	
Polyurethane		Unknown	Unknown	OW 1285-1339	N	
Polyzole		Product	Unknown	Wilmington Finished Goods	N	
potassium		Unknown	Unknown	Severn Trent Results 1998	N	
Potassium bromate		Reagent	Unknown	OW 798168	N	
Potassium bromide		Reagent	Unknown	OW 798168	N	
Potassium F-80		Unknown	Unknown	ltr from Stepan	N	
Potassium hexoate		Raw	Unknown	OW 005200 Olin Memo	N	
Potassium Hydroxide		Raw	Unknown	OW 005211 Olin memo	Y	01310-58-3
Potassium octate		Raw	Unknown	OW 005200 Olin Memo	N	
Potassium oleate		Raw	Pre	OW 021018 List of Raw materials	Y	
Potassium Stearate		Raw	Unknown	OW 005200 Olin Memo	Y	593-29-3
Processing oil		Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	N	
propionic hydrazine		Unknown	Unknown	OW 797564	N	
PVC		Unknown	Unknown	OW 1285-1339	N	
Pyridine		Unknown	Unknown	OW 373720 Stepan Technical Information	N	
Rapeseed oil		Unknown	Unknown	Wilmington Raw Materials sheet 2	N	
Reclaim oil NEV-LX-859		Product	Pre	AB 04322 Unit Summary	N	
RIA CS		Product	Unknown	Wilmington Finished Goods	N	
RIA G-62		Product	Unknown	OW 1285-1339	N	
RIA NC		Product	Pre	Wilmington Finished Goods	N	
RIA PL-66		Product	Pre	AB 04322 Unit Summary	N	

0041-0145

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
RIA X-66		Product	Pre	AB 04322 Unit Summary	N	
Rilsan		Unknown	Unknown	Miscellaneous Paper	N	
RP-3		Product	Unknown	Wilmington Finished Goods	N	
RPC		Unknown	Unknown	Written sheet 1997	N	
Rubber Process Oil #415		Raw	Unknown	OW 021018 List of Raw materials	N	
S 6150		Product	Unknown	Wilmington Finished Goods	N	
S 7554		Product	Unknown	Wilmington Finished Goods	N	
S 7613		Product	Unknown	Wilmington Finished Goods	N	
S 7614		Product	Unknown	Wilmington Finished Goods	N	
S 7615		Product	Unknown	Wilmington Finished Goods	N	
S 7707		Product	Unknown	Wilmington Finished Goods	N	
S 7708		Product	Unknown	Wilmington Finished Goods	N	
S 7842		Product	Unknown	Wilmington Finished Goods	N	
Santicizer 722		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
Santocel	Silica aerogel	Raw	Unknown	Table 2.2 from CSA	Y	63231-67-4
Sebacic dihydrazide		Product	Unknown	Wilmington Finished Goods	Y	925-83-7
Semicarbazide hydrochloride		Unknown	Unknown	OW 023366 Olin	N	
Semicarbazide solution		Product	Pre	Table 2.2 from CSA	N	
Semi-gloss	S-7268	Product	Unknown	Wilmington Finished Goods	N	
Silica		Raw	Unknown	OW 005200 Olin Memo	N	
Silicon Dioxide	Sand; Aerosil 380	Unknown	Unknown	OW 567715 Olin ltr	Y	7631-86-9
Silicone	Polycone	Raw	Unknown	Table 2.2 from CSA	Y	
Soda ash		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
sodium		Unknown	Unknown	Severn Trent Results 1998	N	
Sodium acetate		Raw	Unknown	OW 005200 Olin Memo	N	
Sodium Azide		Raw	Pre	Table 2.2 from CSA	Y	26628-22-8
Sodium Bicarbonate/Sodium Carbonate		Raw	Unknown	OW 005200 Olin Memo	Y	144-55-8/497-19-8
sodium bichromate		Unknown	Unknown	HP 00269	N	
Sodium Bromide		Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	Y	7647-15-5
Sodium Chlorate	Soda Chlorate	Raw	Pre	OW 021018 List of Raw materials	Y	07775-09-9
Sodium Chloride		Waste/By-product	Pre	Table 2.2 from CSA	Y	7647-14-5
Sodium dicarbonate		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
Sodium Dichromate		Unknown	Unknown	HP 00653 Product K-1 operating procedure	Y	10588-01-9
Sodium Hydroxide Liquid/Flake	Soda Lye Solution	Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	1310-73-2
Sodium Hypochlorite		Raw	Unknown	OW 006285 Olin	Y	07681-52-9
sodium lauryl sulfate		Unknown	Unknown	OW 797561	N	

0041-0146

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Sodium Nitrate		Waste/By-product	Pre	Table 2.2 from CSA	Y	7631-99-4
Sodium Nitrite		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	07632-00-0
Sodium Stearate		Raw		OW 005200 Olin Memo	Y	822-16-2
Sodium Sulfite/Sulfate		Waste/By-product	Pre	Table 2.2 from CSA	Y	7757-83-7/7757-82-6
Soybean Oil Epoxide	Vikoflex	Unknown	Unknown	OW 021018 List of Raw materials	Y	
Stearate		Unknown	Unknown	OW 1285-1339	N	
Styrene	Ethylbenzene, styro, styrolene, cinnamene, cinnamol, phenylethylen, vinyl benzene	Unknown	Unknown	OW 1285-1339	N	
Styrene butadiene rubber	SBR	Unknown	Unknown	Excerpt from Riley Deposition	N	
Sulfuric Acid		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	07664-93-9
Sunpar 120		Raw	Unknown	OW 021018 List of Raw materials	N	
Sunthen 410 oil		Unknown	Unknown	Oils used at Wilmington	N	
SWS 233	silicon emulsion	Raw	Unknown	OW 021018 List of Raw materials	N	
Sytox ADP	DODPA, Lestane, dioctyldiphenylamine, ADP-F	Product	Pre	Wilmington Finished Goods	N	
Tall oil	Liqrene	Unknown	Unknown	Oils used at Wilmington	N	
TBA		Unknown	Unknown	OW 797580	N	
TBR		Unknown	Unknown	OW 1285-1339	N	
Tetraflex DBP		Product	Pre	AB 04322 Unit Summary	N	
Tetraflex DIDP		Product	Pre	AB 04322 Unit Summary	N	
Tetraflex DOP		Product	Pre	AB 04322 Unit Summary	N	
Tetraflex R-122		Product	Pre	AB 04322 Unit Summary	N	
Tetraflex RS-10		Product	Pre	AB 04322 Unit Summary	N	
Tetraphen 201-C		Unknown	Unknown	AB03289 NP	N	
Tetraphen 201-P		Unknown	Unknown	AB03289 NP	N	
Tetraphen 218 I		Unknown	Unknown	AB03295 NP	N	
Tetraphen 218 P		Unknown	Unknown	AB03295 NP	N	
Tetraphen S-201-F		Unknown	Unknown	AB03289 NP	N	
Tetrphen 218 C		Unknown	Unknown	AB03295 NP	N	
Thiosemicarbizide		Unknown	Unknown	OW 797273	N	
Titanium Dioxide	R-66	Product	Pre	AB 04322 Unit Summary	N	
TMTD		Product	Pre	AB 04322 Unit Summary	N	
Toluene		Raw	Unknown	Table 2.2 from CSA	Y	00108-88-3
Toluene Diisocyanate		Unknown	Unknown	Lab Record Book H57701	N	
Toluol		Unknown	Unknown	OW 005200 Olin Memo	N	
Trancoa 375 B		Unknown	Unknown	OW 1285-1339	N	
Trichloroethylene		Unknown	Unknown	Severn Trent Results 1998	N	

0041-0147

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Triethanolamine		Raw	Unknown	OW 373732	Y	102-71-6
Triisopropanolamine		Unknown	Unknown	OW 005211 Olin memo	N	
Triphenyl phosphite		Unknown	Unknown	BDG 000007, Fisons limited	N	
Trivalent chromium		Unknown	Unknown	OW 373643	N	
Ucon 50 HB5100		Unknown	Unknown	OW 373732	N	
Ufamite MM 67		Raw	Unknown	Table 2.2 from CSA	Y	
Urea	Carbamide	Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	Y	00057-13-6
Urea formaldehyde Resin		Product	Pre	Table 2.2 from CSA	N	
vanadium		Unknown	Unknown	Phase I Site Inspection (2nd)	N	
Wiltrol N	N-NDPA; n-nitrosodiphylamine	Product	Unknown	Wilmington Finished Goods	N	
Wiltrol P	phthalic anhydride	Product	Pre	AB 04322 Unit Summary	N	
Wytox 312	TNPP, trisnonylphenylphosphite	Product	Pre	Wilmington Finished Goods	Y	26523-78-4
Wytox 312-S		Product	Unknown	OW 567715 Olin ltr	N	
Wytox 320	alkaryl phosphite	Product	Unknown	OW 567716	N	
Wytox 345/355/438	Polymeric phosphite	Product	Unknown	Wilmington Finished Goods	N	
Wytox 438-S		Product	Unknown	OW 567715 Olin ltr	N	
Wytox 540		Product	Unknown	Wilmington Finished Goods	N	
Wytox 604		Product	Unknown	Wilmington Finished Goods	N	
Wytox 604IMS		Product	Unknown	OW 567715 Olin ltr	N	
Wytox ADP		Product	Unknown	Location of Acid Pits Figure	N	
Wytox BHT	butylated hydroxytoluene	Product	Unknown	JMW03455 Minutes	N	
Wytox LT	Diaurylthipropionate	Product	Unknown	JMW03455 Minutes	N	
Wytox NPD-J-S		Product	Unknown	OW 567715 Olin ltr	N	
Wytox PAP	alkylated phenol	Product	Pre	Wilmington Finished Goods	N	
Wytox PAP-S		Product	Unknown	OW 567715 Olin ltr	N	
Wytox PAPSE	self-emulsifying polmeric hindered phenol	Product	Unknown	OW 567715 Olin ltr	N	
Wytox PDA	polmeric hindered phenol	Product	Unknown	Wilmington Finished Goods	N	
Wytox PMW		Product	Unknown	Wilmington Finished Goods	N	
Xylene	dimethylbenzene	Solvent	Unknown	OW 797611	Y	01330-20-7
Zinc hexoate		Raw	Unknown	OW 005200 Olin Memo	N	
Zinc octate		Raw	Unknown	OW 005200 Olin Memo	N	
Zinc Oxide		Raw	Pre	Table 2.2 from CSA	Y	1314-13-2
Zinc Stearate		Raw	Unknown	OW 005200 Olin Memo	Y	557-0501

0041-0148

EXHIBIT E

F Wilmington
FPA Site Investigation

FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES

FIT PROJECT

TDD # F1-8005-01F

December 5, 1980

TASK REPORT TO THE ENVIRONMENTAL PROTECTION AGENCY CONTRACT NO. 68-01-6056

SITE INSPECTION REPORT
of
OLIN CHEMICALS GROUP PLANT

Eames Street
Wilmington, Massachusetts

Submitted to:
John Hackler, Chief
Office of Uncontrolled Waste Sites
U.S. EPA, Region I

Submitted by:
David Cook, Project Leader
Ecology and Environment, Inc. (E & E)
FIT Team, Region I

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International Specialists in the Environmental Sciences

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SITE INSPECTION REPORT

FOR

OLIN CHEMICAL GROUP
WILMINGTON PLANT

TDD #:	F1-8005-01F
Firm Name:	Olin Chemicals Group
Address:	Eames Street Wilmington, Massachusetts
Telephone:	203-356-3156
Owner:	Corporation
Principal Contact at Site:	Mr. David Vaughn (Hartford Office)

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1. Purpose of Inspection:

To gather information and samples necessary to determine the potential for possible RCRA and/or 311/104 Clean Water Act actions against Olin Chemical Group.

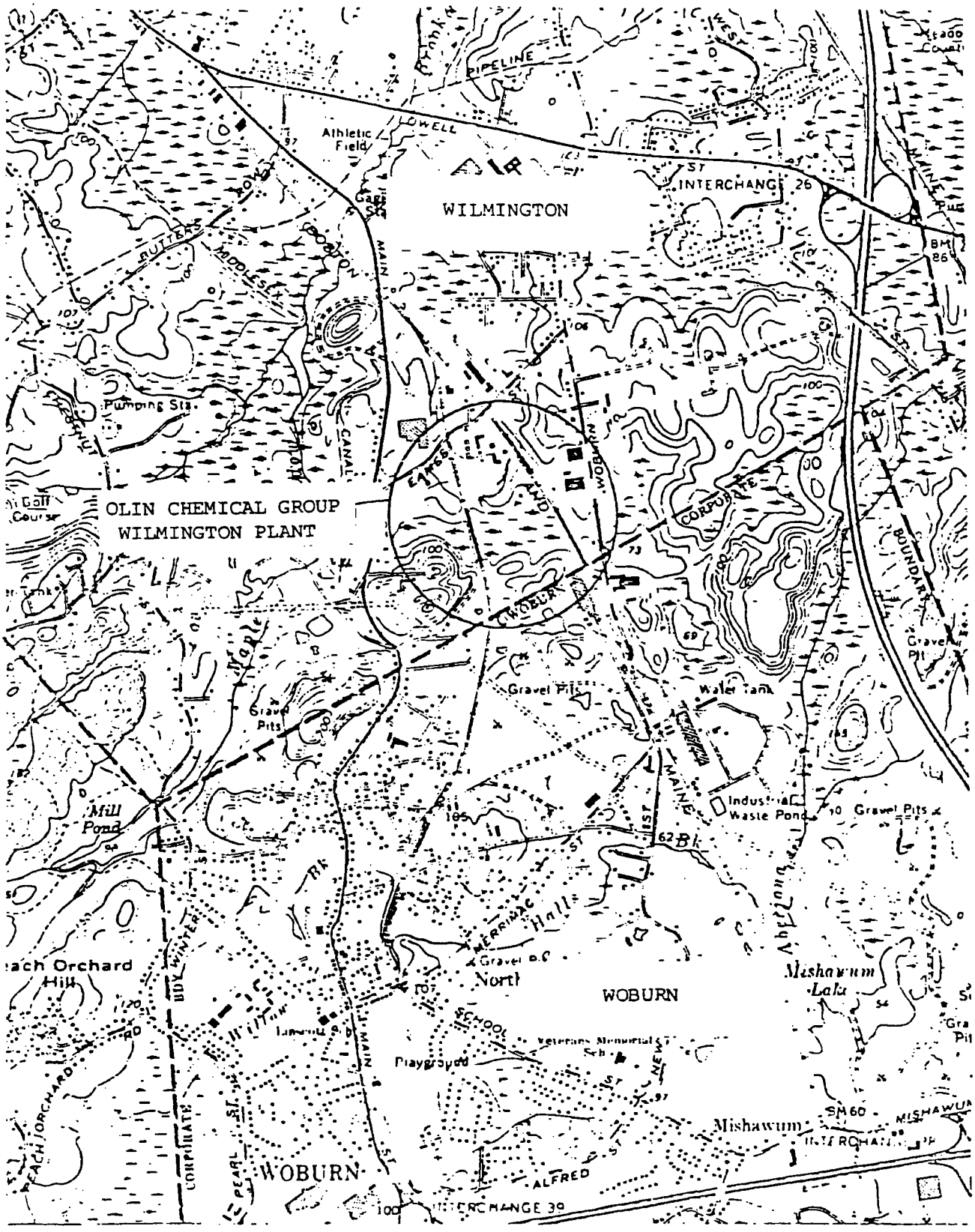
2. Objective:

To conduct an on-site investigation of the Wilmington Plant site in order to locate evidence of contamination, identify possible contaminants and collect appropriate samples for screening and analysis.

3. Background:

3.1 Description:

The Olin Chemicals Group Wilmington Plant occupies a 53-acre site south of Eames Street in Wilmington, Massachusetts. The site is bounded on the east by the Boston and Maine railroad tracks, on the south by the Woburn-Wilmington town line, on the west by a Boston and Maine railroad spur, and on the north by Eames Street (See Figures 1 and 2). The property was purchased by Olin Chemicals Group in September, 1980 from the Stepan Chemical Company which had occupied the site since 1971. Chemical plant operations on this site began in 1953 under the ownership of National Polychemicals, Inc. which merged with Stepan Chemical Company in 1971. The northern one-half of the site is occupied by the production facilities, and the southern one-half is wooded. A drainage ditch parallel to the Boston and Maine tracks borders the eastern project site boundary and carries water from north to south. This drainage ditch continues adjacent to the tracks until its confluence with Hall's Brook about 0.9 miles south of the site. Nearly all surface water on the site is routed to a single channel which flows into the drainage ditch, as shown in Figure 2.



From USGS Quadrangle Map - Wilmington Quadrangle.

Scale: 1" = 2000'

Figure 1 - Location Map of
Olin Chemicals Group
Wilmington Plant.

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3. Background:

3.1 Description -continued

At the time when the aerial photograph presented in Figure 3 was taken (April 24, 1971), three acid pits existed to the south of the processing facilities. These pits have been replaced by rectangular settling basins as shown in Figure 4 (photographed on April 29, 1977). An extensive area of distressed vegetation is present in the east-central portion of the property. Also on the property are eleven large storage tanks noted in Figure 4. there are twelve wells on the property as noted in Figure 2.

3.2 Primary Site Activity:

Several chemicals have been synthesized on-site from a variety of ingredients. The processes used and the final products are as follows (quantities based on 1973 production figures):

Opex Process -	Dinitropentamethylenetetramine (DNPT), a slightly water soluble solid used as a blowing agent in the production of expanded rubber compounds, 1.2 million pounds per year.
Kempore Process -	Azodicarbonamide (Kempore), also a slightly water soluble solid used as a rubber blowing agent, 1.6 to 1.8 million pounds per year.
Wytox Process -	Wytox, a liquid phosphite rubber stabilizer, one million pounds per year.
Wytox ADP-X Process -	Dioctyldiphenylamine (DODPA), a dark colored resinous solid, 600,000 pounds per year.
O.B.S.H. Process -	Oxybisbenzenesulfonylhydrazide (OBSH), a rubber blowing agent, 300,000 pounds per year.

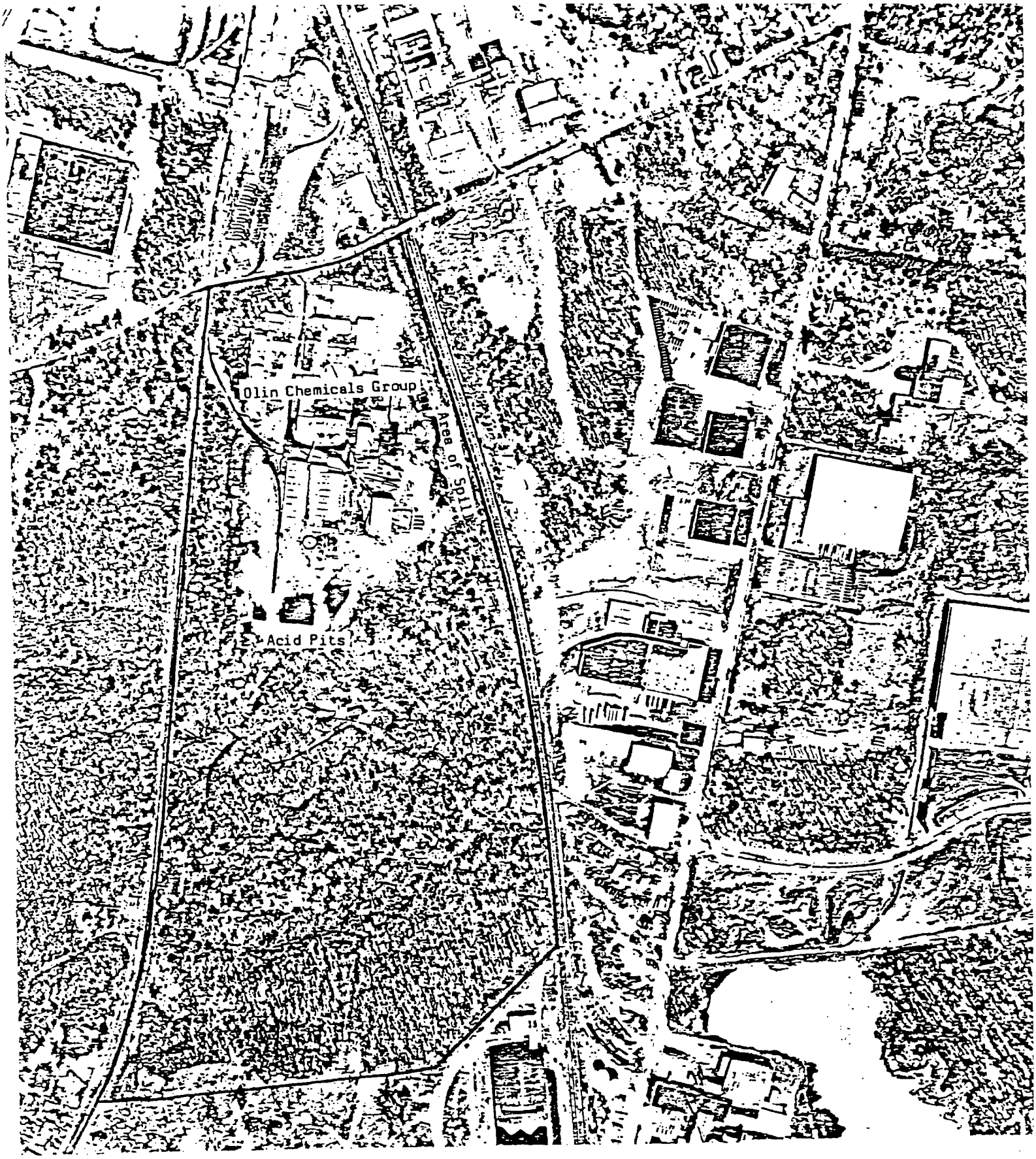

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Figure 3 - April 24, 1971
Aerial Photograph Showing the Location of the Former Acid Pits.

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3. Background:

3.2 Primary Site Activity - continued

Raw materials and waste products for the preceding processes are listed in Table 1. Only those waste products discharged into the yard or floor drainage system are listed. The drainage system is shown in Figure 5.

In addition to the above processes, numerous coatings for rubber products were produced on site. The following chemicals were used to produce the coatings:

Bentone
Santocel
Ufamite MM 67
Toluene
Butylacetate
Acrylic Resins
Maleic Anhydride
Glycerine
Fatty Amines
Silicone
Monoethanolamine
Mineral Oil

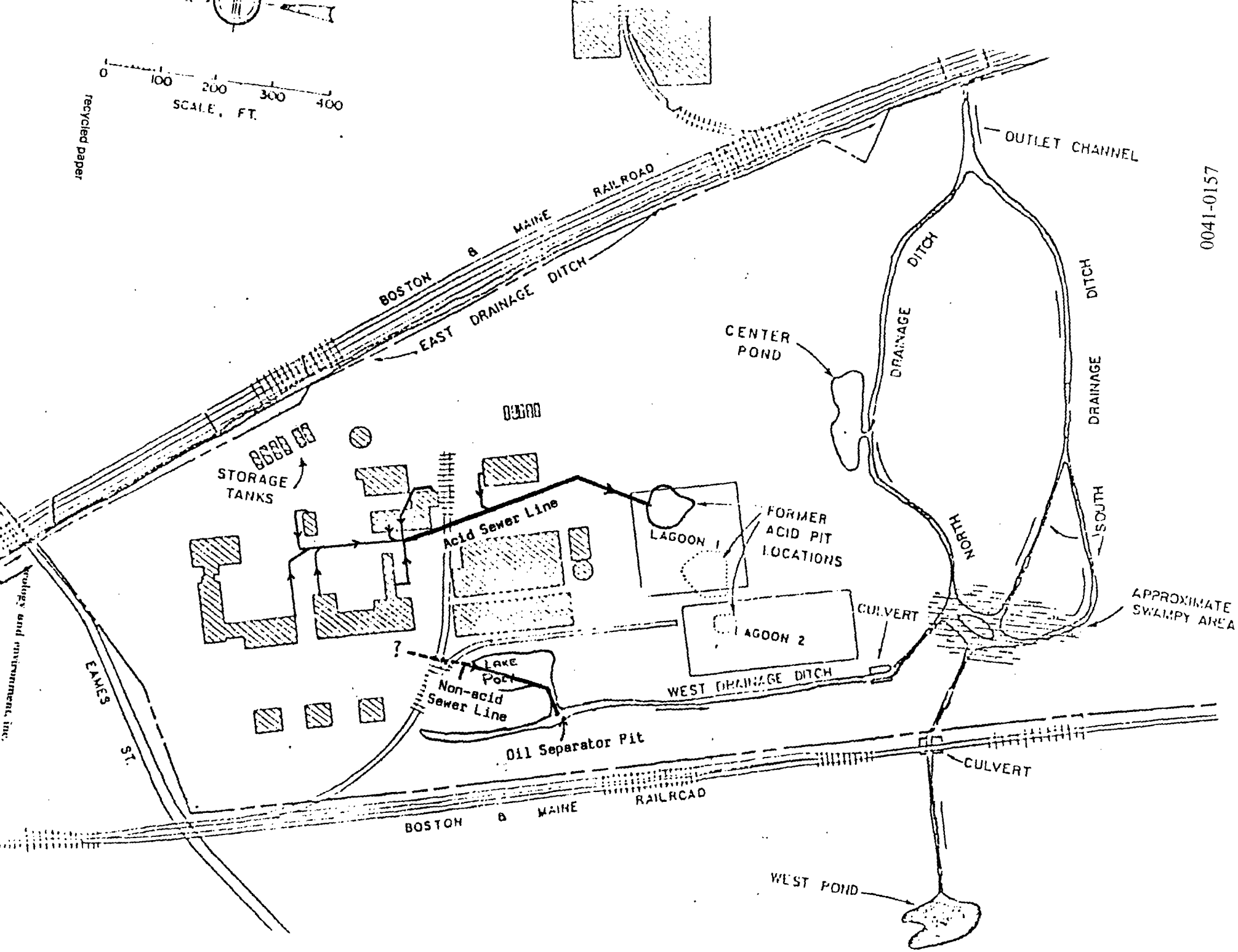

Figure 5 -
Process Sewer System
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3. Background:

3.2 Primary Site Activity - continued

TABLE 1 - Raw Materials and Waste Products Associated With Chemical Processes Used by National Polychemicals, Inc. and Stepan Chemical Company between 1953 and 1978.

Process	Raw Materials	Waste Products
Opex	anhydrous ammonia formaldehyde sodium nitrite hydrochloric acid	sodium chloride formaldehyde sodium nitrite process oil
Kempore	liquid chlorine urea sodium hydroxide sulfuric acid hydrazine	sodium sulfate sodium chloride ammonium sulfate urea sulfuric acid
Wytox	phosphorous trichloride paraformaldehyde nonyl phenol	None sewered
Wytox ADP-X	diphenylamine diisobutylene aluminum chloride	diisobutylene aluminum hydroxide sodium chloride
O.B.S.H.	diphenyloxide chlorosulfonic acid	sulfuric acid

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3. Background:

3.2 Primary Site Activity - continued

According to MDC records, the following materials were being stored on-site as of June 30, 1980:

MATERIAL BEING STORED:	Annual Thruput (gals.)	Type of Storage Container (tank, drum, etc.)	Size of Container (gals.)
1. Formaldehyde	172,500	Tank	13,300
2. Nonyl phenol	281,600	Tank	10,000
3. Dinonyl phenol	30,500	Tank	6,700
4. Ethyl hexoic acid	18,400	Tank	5,000
5. Dioctylphthlate	54,200	Tank	15,000
6. Process Oil	11,800	Tank	4,250
7. TNPP (Wytox 312)	50,000	Tank	10,000

Chemicals used or manufactured at this site are transported in 55-gallon drums by railcar.

3.3 Secondary site activity:

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Not applicable

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3. Background:

3.4 Hazards Identified or Alleged:

Potential sources of contamination as a result of on-site activities past or present are the following:

1. Leaking of materials from storage tanks.

2. Leaching of materials from acid pits.

3. Leaching of materials from burial sites.

4. Exfiltration from sewers.

A close examination of the chemicals which have been used on-site indicates that only a small number may have contributed or are contributing to an environmental hazard. Toluene and dioctylphthalate are included in the Federal Register list of priority pollutants. It is highly likely that toluene would have volatilized soon after a spill. Dioctylphthalate is very persistent and has been associated with pneumonia-like symptoms. Several other chemicals used on site including hydrazine, nonylphenol, dinonylphenol, and ethyl hexoic acid may cause undesirable symptoms. The extensive vegetative stress noted on-site is probably the result of high sodium chloride and sulfuric acid concentrations leaching from the former acid pits.

Prior to 1971, all waste materials were disposed of on-site either into a series of three acid pits or directly into a series of channels on the property. Eventually, all material either leached or drained into the ditch paralleling the Boston and Maine railroad tracks and proceeded ultimately to the Aberjona River. In 1971, disposal of wastes was changed to the system presently in use. Sulfate bearing wastes are mixed with a calcium hydroxide slurry to form a calcium sulfate sludge which is disposed of in two polyvinyl chloride (PVC)-lined lagoons. An analysis of this sludge is as follows (analyzed by National Polychemicals, Inc., September 1970):

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3. Background:

3.4 Hazards Identified or Alleged - continued

Water	27,500 lbs.
Gypsum	26,800 lbs.
$CaCO_3$	650 lbs.
Calcium Oxbisbenzene Sulfonate	Trace
Na_2SO_4	Trace
$Al(OH)_3$	Trace
NaCl	Trace
$CaCl_2$	Trace
Formaldehyde	Trace
$NaNO_2$	Trace
NH_4Cl	Trace
TOTAL	54,950 lbs. = 27.5 Tons/Day

A study performed in 1979 by Geotechnical Engineers, Inc. of Winchester, Massachusetts, indicated that several holes exist in the PVC liner (See Figures 6 to 8). It was also discovered that sludge has been dumped in an emergency lagoon when the two existing lagoons filled to capacity (See Figure 4). This emergency lagoon had no liner and was formed by dredging soil to form a roughly rectangular area. Solids from the lagoons are dredged periodically and landfilled on the southwest corner of the property. The landfill site was approved by the State Department of Environmental Quality Engineering (DEQE). The analysis of the sludge indicates that no environmental hazards would result from leaching of the lagooned or landfilled materials into the ground.

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Non-sulfate bearing wastes generated on-site are presently discharged into an underground sewer line which connects to a Town of Wilmington owned sewer. This line connects to a Metropolitan District Commission (MDC) sewer line. Complaints regarding high chloride, sulfate and ammonia levels in the sewer effluent have been made on several occasions.

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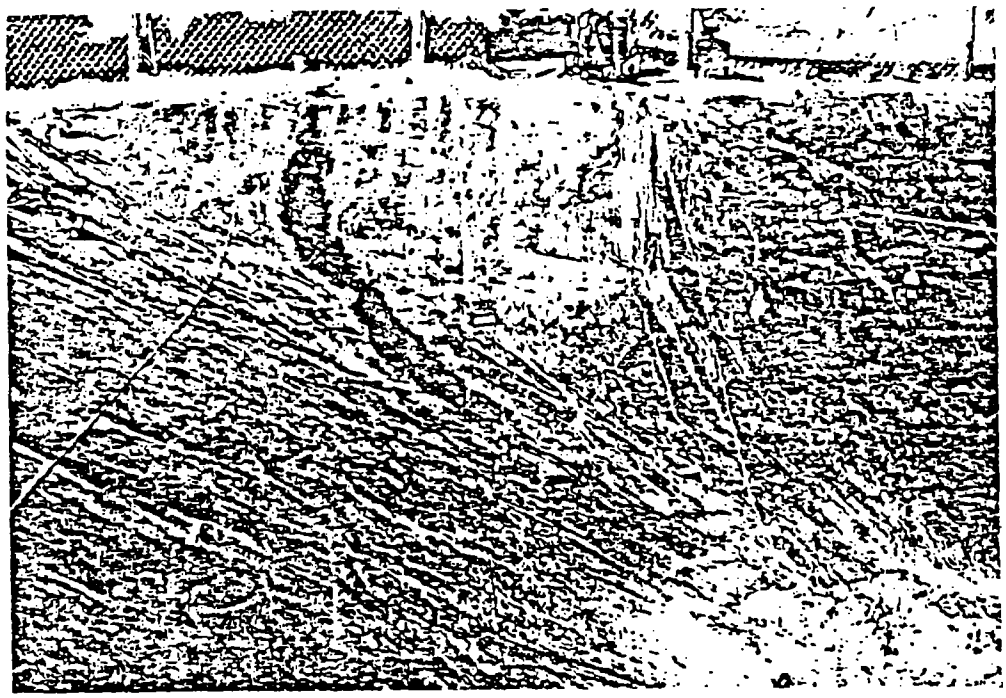

Figure 6 - Leak Along the Seam of the Polyvinyl Chloride Liner in the Sulfate Sludge Lagoon.

Figure 7 - Enlargement from Figure 6.

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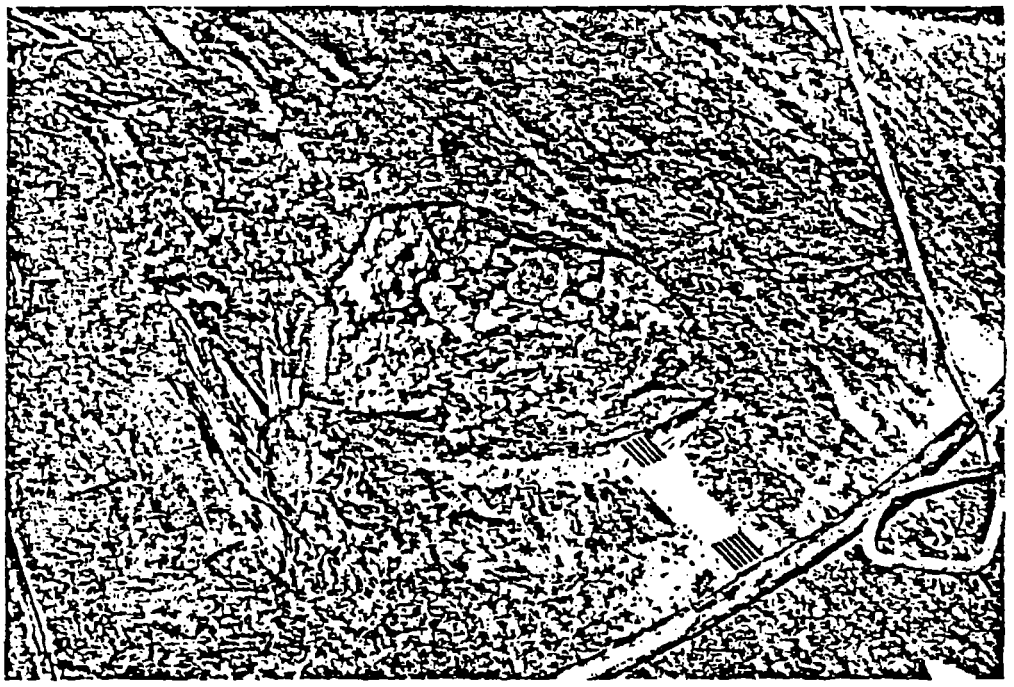

Figure 8 - Hole in the Polyvinyl Chloride Liner Associated with the Sulfate Sludge Lagoon.

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Figure 9 - Sheen resulting from "black ooze" seeping into the Drainage Ditch.

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3. Background:

3.4 Hazards Identified or Alleged - continued

An unofficial report from a former Stepan employee indicates that phosphorus trichloride was often dumped directly into the ground and that residues were buried next to the wetlands near the drainage channel. Sediment and ground water samples were taken in an attempt to confirm or deny the existence of an environmental hazard resulting from such alleged activities.

A 1977 aerial photograph shows two areas where drums were stored on-site (See Figure 4). Leaks in these drums may have resulted in ground water contamination. The 1971 photo (Figure 3) also reveals a spill generating from the group of six large storage tanks on the east side of the property. Since 1973, "black ooze" has been noted seeping into the drainage ditch paralleling the railroad tracks east of the site (Figure 9). A sample was taken by the E & E, FIT team on October 2, 1980, (See memo to John Hackler from David Cook dated October 6, 1980). A conversation between D. Cook (E & E) and D. Vaughn (Olin) revealed that dioctylphthalate, dimethylamine, dioctylamine and other related compounds are present in the "black ooze" as well as in Well GW-2 (See Figure 2). This was determined by an analysis performed by Olin. Mr. Vaughn was very hesitant to have Well GW-2 sampled. He stated that he knew the well was contaminated and Olin was prepared to perform remedial actions of an undisclosed nature to rectify the situation.

The drainage ditch mentioned above has been the object of sampling and analysis on several occasions. On January 23, 1980, five samples were collected by the EPA and subsequently analyzed for purgeable organics. The results indicated the following:

1. Moderate to high levels of 1,1 - dichloroethane, 1,1,1 - trichloroethane, trichloroethylene, toluene and xylene are present upstream of Stepan/Olin.

3. Background:

3.4 Hazards Identified or Alleged - continued

2. Moderate to high levels of 1,1,2 - dichloroethylene and 1,1,2 - trichloroethane in addition to the five chemicals listed under (1) are present downstream of Stepan/Olin.

3. Therefore, some chlorinated hydrocarbons may be leaching from Stepan/Olin into the drainage ditch.

4. Analyses of the outfalls from Stepan/Olin do not indicate significant off-site migration of contamination.

Priority pollutant samples were taken from the drainage ditch paralleling the railroad tracks on July 28, 1980. Analyses of samples taken upstream and downstream of the Stepan/Olin property suggested that small amounts of the priority pollutants listed in Table 2 are generating from the site.

The primary purpose of this site inspection was to gather appropriate samples for analysis to determine if any ground or surface water contamination is generating from Olin property. The sampling plan is presented in Section 4, and the sampling procedures and screening results are included in Section 7.2 of this report. The preliminary results indicate that, with the exception of the "black ooze" and significant amounts of residual heavy hydrocarbons noted in Section 7.2, no significant sources of contamination are present on site. Evidence of buried drums was noted just west of the headwall (See Figure 2). However soil, surface water and groundwater revealed no evidence of hazardous chemicals generating from the burial site.

4. Concept of Operation:

A seven-person team entered this site to identify the nature of materials stored on site, investigate possible sources of contamination and collect appropriate samples for screening and analysis.

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Table 2:

Priority Pollutants Suggested To Be Entering the East Drainage Ditch from Olin Property
(Based on July 28, 1980 Priority Pollutant analyses)

CONTAMINANT	METHOD OF CONTACT	HEALTH EFFECTS
Trichloroethylene	Inhalation:	Headache, nausea, drowsiness
	Chronic Inhalation:	Possibly liver damage. (This has not been documented in Humans).
	Inhalation of large quantities:	May cause narcosis
	Ingestion:	Possibly liver damage. (This has not been documented in humans).

Note: TCE is an experimental animal carcinogen. (rats). 1979 recommended ambient water quality criterion 2ug/l Based on tumors in rats and not on human health affects.

N-Nitrosodiphenylamine	Ingestion only	Not an inhalation hazard.
	Toxicity:	This compound belongs to the class of nitrosamines.

Note: Nitrosamines are suspected human carcinogens. There are no human data, but nitrosamines do cause tumors of the stomach, lung, liver, bladder and kidney in rats. The class criterion is 0.1/ug/l water (ambient water) based on tumor formation in rats.

Bis (2-Ethyl hexyl) phthalate

Note: Phthalates are non-biodegradable and potential aquatic hazards. They have no documented human health effects that may be associated with environmental hazards.

Phthalates are used as plasticizers in latex materials and are often used in medical equipment such as IV infusion sets.

Phthalates may leach off of such equipment and are suspected in the etiology of shock lung syndrome when injected intraveneously.

1,1,2 - Trichloroethane	Toxicity - Inhalation:	Narcotic, local irritant may (B - cause liver and kidney damage.
	Ingestion:	Local irritant (in 1 ug/l concentrations) suspected to cause liver and kidney damage

Note: It may be a percutaneous hazard - when hands are immersed in concentrated liquid (only).

1,2 - trans-Dichloroethylene	Toxicity:	low toxicity except when exposed to concentrated vapor - nausea, vomiting, dizziness with immediate recovery upon removal from exposure.
	Ingestion:	Ingestion of concentrated liquid - hausea, vomiting.

Note: 1,2 - DCE is a dermatitis producing agent. It is not percutaneous.

Vinyl Chloride:

Note: A well-known human carcinogen. 1979 ambient WQ criterian = 51 ug /l based on tumor-production in rats

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4. Concept of Operation - continued

The following instruments were used during the visit to delineate potentially hazardous areas and screen samples:

1. Century organic vapor analyzer (OVA)

2. Explosimeter

3. Oxygen meter

The site sampling plan was based upon existing knowledge of groundwater and surface water movement on Olin property. The groundwater contours presented on the overlay for Figure 10 are from a report entitled "Report on Groundwater and Surface Water Study - Stepan Chemical Company, Wilmington, Massachusetts" by Geotechnical Engineers, Inc. of Winchester, Massachusetts (1979). Both groundwater and surface water moves in a northwest to southeast direction. As a result, priority pollutant groundwater and surface water samples were taken near the southeast corner of the site. A priority pollutant groundwater sample was taken near the northwest corner of the site for background data. A total of eight groundwater, ten surface water and five soil samples were taken. The sampling locations are shown in Figure 10. See Section 7.2 of this report for detailed sampling procedures and preliminary screening results. Parameters for the monitoring wells on Olin property are presented in Table 2.

All samples were iced immediately and brought to the EPA Regional Laboratory in Lexington, Massachusetts, for further screening and analysis. Appropriate decontamination measures were followed prior to leaving the site. The safety plan and report are included in Appendix A.

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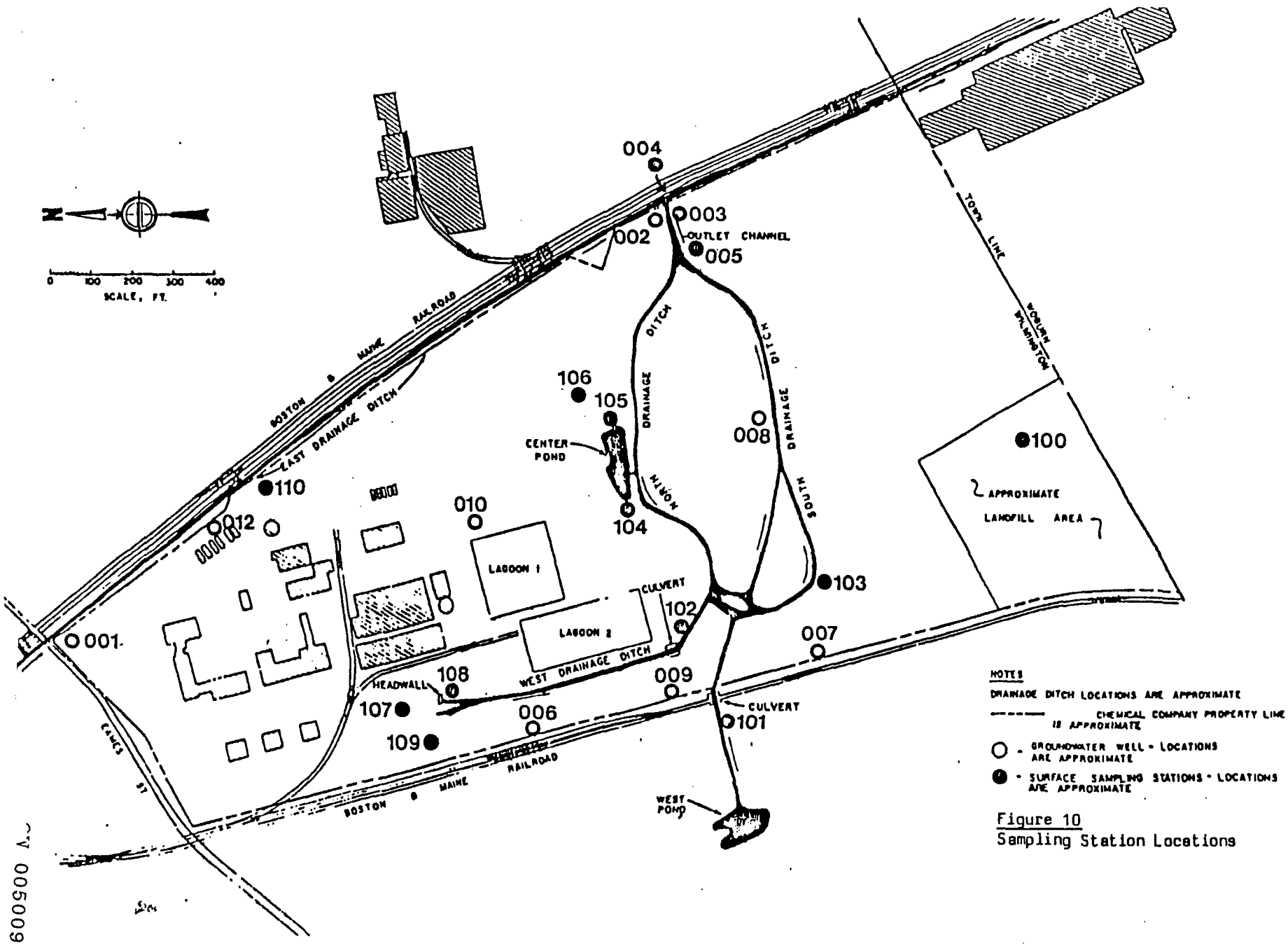

Figure 10
Sampling Station Locations

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TABLE 3 - Parameters for Monitoring Wells on the Olin Property in Wilmington, Massachusetts

Well #	Depth of Well (ft.)	Water Table Depth (ft.)	Depth of Screened Section (ft.)
GW - 1	21.2	9.0	14.0 - 19.5
GW - 2	15.0	7.5	9.5 - 14.5
GW - 3	22.0	4.2	10.0 - 15.0
GW - 4	13.5	2.5	8.0 - 13.0
GW - 5	12.0	0	5.0 - 10.0
GW - 6	18.0	4.0	8.2 - 13.2
GW - 7	14.0	2.6	8.5 - 13.5
GW - 8	10.2	1.5	3.2 - 8.2
GW -10	24.0	5.4	4.8 - 9.8
GW -11	17.0	3.9	9.0 - 14.0
GW -12	12.7	0	4.8 - 9.8

- All wells have inside diameters of 1.5".
- Location of wells is shown in Figure 2 of this report.
- All well parameters are from: Report on Groundwater and Surface Water Study - Stepan Chemical Company, Wilmington, Massachusetts: Geotechnical Engineers, Inc. Winchester, Massachusetts, December 6, 1978.

5. Logistics and Site Setup:

Because of the large area covered during this inspection and the large amount of sampling equipment required to accomplish the objective, it was necessary to move the van and associated decon several times. Figure 11 shows the various locations of the van during the inspection. Equipment decontamination was performed after each sampling effort, and appropriate equipment and personnel decontamination measures were performed following the final sampling at Well GW-2 (Station 012).

No hot line was delineated as no "hot spots" were indicated during the preliminary assessment or the site inspection.

No logistical problems were encountered during the planning and performance of this site inspection. A minor pumping problem was encountered during sampling at the first groundwater station (001). However, following appropriate adjustments, samples were successfully retrieved from depths up to ten feet with the portable hand pump. The portability of this sampling technique was very important at Station 008 which was nearly inaccessible due to dense vegetation and swampy ground.

6. Site entry team and Schedule of Events:

6.1 Site Entry Team and Team Assignments:

David Cook	-	Site Entry Team Leader
Paul Clay	-	Sampling Officer
Lori Fucarile	-	Safety Officer
Glenn Smart	-	Equipment/Work Party
Richard DiNitto	-	Work Party
Margret Hanley	-	Work Party
Bill Norman	-	Work Party

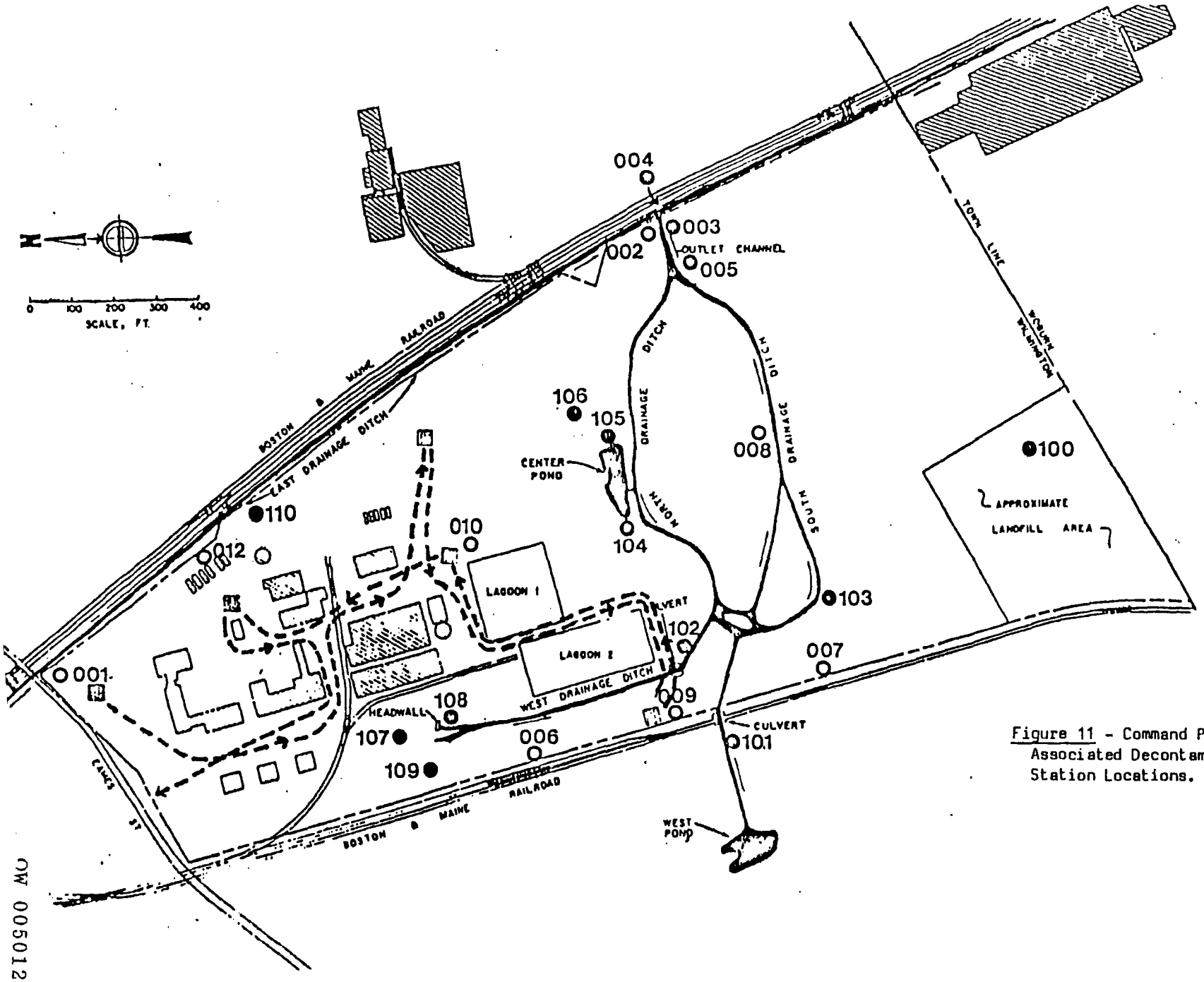

Figure 11 - Command Post and Associated Decontamination Station Locations.

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6. Site Entry Team and Schedule of Events - continued

6.2 Schedule of Events

The site entry team was briefed by the team leader on November 11, 1980 (the day before site entry). The briefing included review of appropriate data obtained during the preliminary assessment for the purpose of making the team aware of all potential hazards. The briefing focused the team's attention on the questions raised by the preliminary site assessment.

In order to facilitate completion of sampling on November 12, 1980, the team was divided into two groups: Cook, DiNitto and Hanley (Team 1) collected the surface water and sediment samples and Fucarile, Clay, Smart and Norman (Team 2) collected the groundwater samples.

The following was the schedule of events for the site inspection.

0900 - Van arrives at Olin, team sets up decon and prepares sampling equipment. D. Cook meets with Olin representatives (Ted Groom and M. Ahsah of Olin Research Laboratory, David Vaughn, Environmental Coordinator and Ron McBrien, Plant Manager) and explains the objectives of the inspection. Split samples and duplicate photos are requested by McBrien and Vaughn.

0930 - Smart and Clay sample Well GW-1 (Station 001, Sample #70818).

1038 - Smart and Clay collect priority pollutant sample at Well GW-5 (Station 002, Sample #70809).

1040 - Cook collects priority pollutant sample of surface water at outlet of on-site drainage ditch (Station 003, Sample #70803).

6. Site Entry Team and Schedule of Events

6.2 Schedule of Events - continued

1100 - Clay samples culvert from E. C. Whitney (Station 004, Sample #70814).

1105 - Clay samples surface water from North Drainage Ditch (Station 005, Sample #70815).

1140 - Smart and Clay collect priority pollutant sample from Well GW-10 (Station 006, Sample #70816).

1200 - Team breaks for lunch and discusses sampling completed and still to be completed.

1315 - Team returns to site and divides into two groups described earlier (Teams 1 & 2).

Team 2:

1330 - Smart and Norman sample Well GW-12 (Station 007, Sample #70825).

1400 - Smart, Clay and Norman sample Well GW-8 (Station 008, Sample #70826).

1430 - Smart, Clay and Norman sample Well GW-11 (Station 009, Sample #70827).

1505 - Norman and Smart sample Well GW-6 (Station 010, Sample #70828).

1530 - Clay, Smart and Norman attempt to sample Well GW-7 (Station 011) but are foiled by a wasps' nest in the well.

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1545 - Team 2 samples Well GW 2 (Station 012, Sample #70812).

6. Site Entry Team and Schedule of Events

6.2 Schedule of Events - continued

Team 1:

1330 - Sediment sample taken with auger at sulfate sludge landfill (Station 100, Sample #70824).

1345 - Sediment and surface water samples taken on Jewel Industrial Park property just west of culvert leading to Olin property (Station 101, Sample #70817).

1355 - Sediment and surface water samples taken at culvert just south of the Lagoon 2 (Station 102, Sample #70807).

1420 - Surface water sample taken approximately 75 feet east of Well GW-12 (Station 103, Sample #70821).

1440 - Surface water sample taken at west end of Central Pond (Station 104, Sample #70822).

1500 - Surface water sample taken at east end of Central Pond (Station 105, Sample #70823).

1515 - Sediment and surface water samples taken in area of dead trees (Station 106, Sample #99999).

1530 - Soil sample taken where Lake Poly was formerly located (Station 107, Sample #70808).

1540 - Surface water taken near headwell (Station 108, Sample #70810).

1550 - Evidence of buried drums (rusted bands lids and two partially buried drums) noted just west of headwall. Shallow soil sample collected (Station 109, Sample #9998).

1610 - Soil sample taken from area just south of tank farm (Station 110, Sample #99997).

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6. Site Entry Team and Schedule of Events

6.2 Schedule of Events - continued

Team 1:

1615 - Teams 1 and 2 reunite at van and proceed to decon personnel and equipment. Chain of custody forms are completed and D. Vaughn of Olin signs for split samples transferred to him.

1640 - Site Inspection completed, team returns to office.

7. Results of Investigation

7.1 Site Representative Interview:

A detailed interview regarding the processes used on site was not necessary as this information was gathered during the preliminary assessment and is incorporated into Section 3.2 of this report. Mr. David Vaughn, Environmental Coordinator for Olin Chemicals Group, did confirm the presence of dioctylphthalate, diphenolamine, dioctylamine and other related chemicals in the "black ooze" seeping into the East Drainage Ditch. The seepage appears to be the result of a spill generating from the tank farm which took place during or prior to 1973. Presented in Appendix C is a letter from Charles P. Riley, Jr., General Manager of National Polychemicals to Thomas C. McMahon, Director of Massachusetts Water Resources Commission, dated July 18, 1973, describing the presence of "black ooze". Mr. Vaughn also confirmed the presence of contamination in Well GW-2 related to this spill and was hesitant to have us sample this well prior to undisclosed remedial action planned by Olin.

Mr. Vaughn expressed his desire to obtain duplicate samples and photographs associated with the site inspection.

7. Results of Investigation - continued

7.2 Sampling procedures and screening results:

7.2.1 Groundwater sampling procedures

The preparation for sampling the monitoring wells on the Olin property was the same in each case: (Note: All wells were capped and bolted. The bolts were sawed off to remove the well cap.)

First, the static level of water in the well was determined with a water level indicator. Second, the bottom of the well was sounded. using these two measurements and the diameter of the well casing (1 1/2", in each case), the static volume of water in the well was calculated. Third, a hand operated vacuum pump attached to a sufficient length of Tygon tubing was used to discharge five times the static volume of the well. (This amount of discharge was not possible in some wells because of slow recharge and silted-in screens.) Following discharge, a volume of sample appropriate for the desired analytical parameters was collected by pumping. E & E personnel first filled their bottles and then filled bottles for Olin sampling personnel.

Between the sampling of each well, the sampling line and pump was cleaned by rinsing thoroughly, first with methanol and then with distilled water. The E & E sampling crew consisted of Paul Clay and Glenn Smart for wells GW-1, 5, and 10 and Paul Clay, Glenn Smart and William Norman for wells GW-12 8, 11, 6, 7, and 2. A groundwater elevation contour map prepared from data gathered during sampling is presented in Figure 12, which is very similar to Figure 10, the groundwater elevation contour map prepared by Geotechnical Engineers. The major difference is that surface of the the water table was generally 1 1/2 to 2 feet lower at the time of the E & E site inspection.

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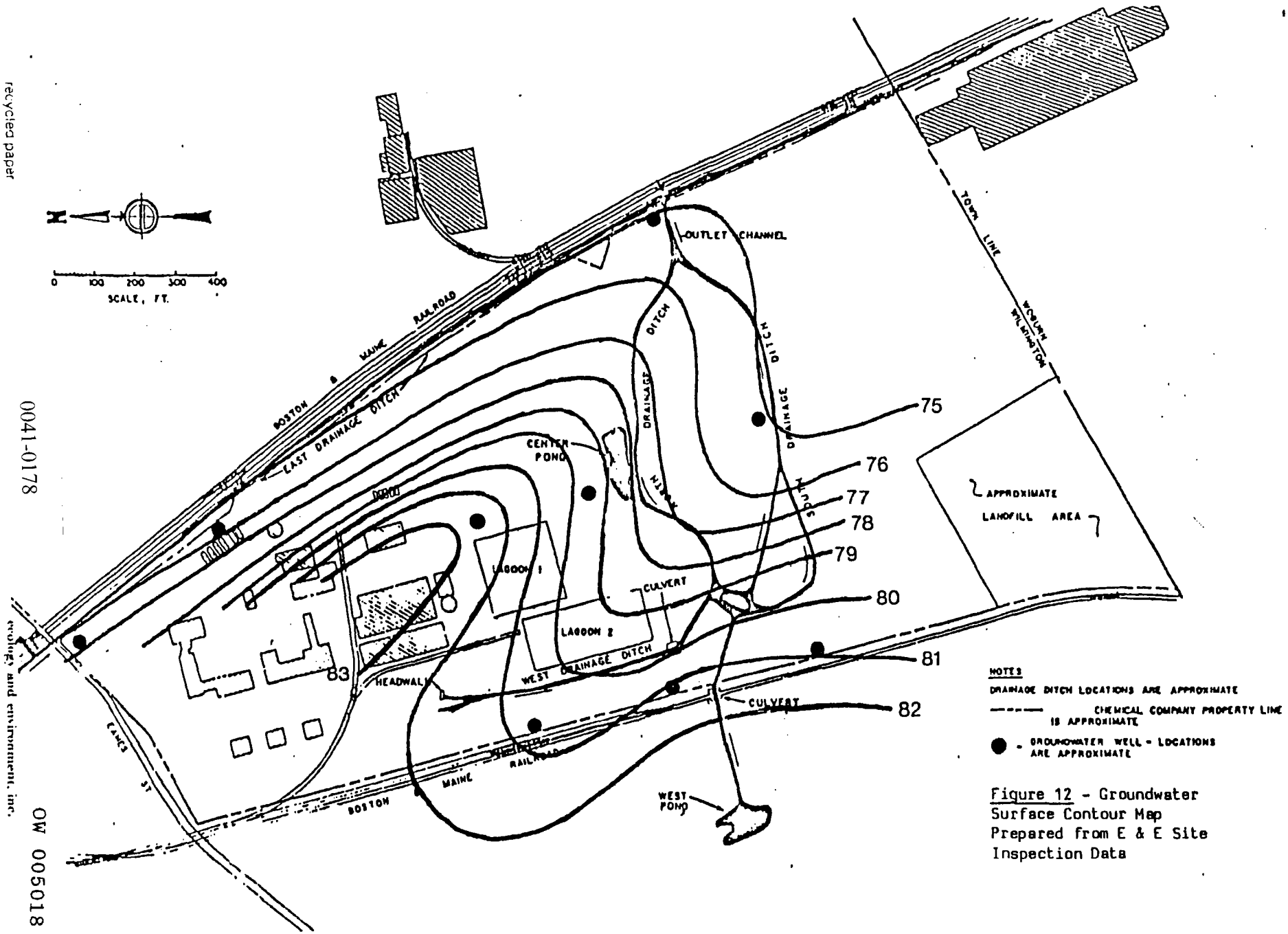

Figure 12 - Groundwater Surface Contour Map Prepared from E & E Site Inspection Data

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7. Results of Investigation

7.2 Sampling procedures and screening results:

7.2.1 Groundwater sampling procedures - continued

The following is a summary of the sampling operations and data obtained at each well:

Olin Well GW-1 (Station 001, Sample #70818):
Depth of well: 21' 4"
Depth to water (static level): 11' 4"
Volume purged prior to sampling: 5 gallons
Samples taken: E & E obtained (1) 40 ml VOA vial with 10% head space for screening. Olin representatives obtained 80 ml.

Olin Well GW-5 (Station 002, Sample #70809):
Depth of well: 13' 2 1/2"
Depth to water (static level): 4' 1"
Volume purged prior to sampling: 5 gallons
Samples taken: E & E obtained the following priority pollutant sample:
(2) 1/2 gallon jars with Teflon lined caps for extractables
(2) 40 ml VOA vials for purgeables
(1) 1 liter polyethylene bottle for metals
(1) 40 ml VOA vial with headspace for screening
Olin representatives obtained similar volumes for similar analyses.

Olin Well GW-10 (Station 006, Sample #70816):
Depth of well: 12' 3"
Depth to water (Static level): 8'7"
Volume purged prior to sampling: 3 1/2 gallons
Samples taken: E & E obtained sufficient volume in appropriate containers for priority pollutant

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7. Results of Investigation

7.2 Sampling procedures and screening results:

7.2.1 Groundwater sampling procedures - continued

analyses (See description under Well GW-5). Olin representatives obtained similar volumes for analyses.

Olin Well GW-12 (Station 007, Sample #70825):

Depth of well: 12' 1"

Depth to water (static level): 4' 7"

Volume purged prior to sampling: 3 1/2 gallons

Samples taken: E & E obtained (1) 40 ml VOA vial with 10% head space for screening. Olin representatives obtained 80 ml.

Note: Due to the fact that leaves and other debris were pumped as this well was purged, it is likely that the well casing is broken below the water table.

Olin Well GW-8 (Station 008, Sample #70826):

Depth of well: 10'10"

Depth to water (static level): 5'1"

Volume purged prior to sampling: 3 1/2 gallons

Samples taken: E & E obtained (1) 40 ml VOA vial with 10% headspace for screening. Olin representatives obtained 80 ml.

Note: Water had a brown, murky color throughout the purging and sampling processes.

Olin Well GW-11 (Station 009, Sample #70827):

Depth of well: 15' 9"

Depth to water (static level): 6'3"

Volume purged prior to sampling: 3 1/2 gallons

Samples taken: E & E obtained (1) ml VOA vial with 10% head space for screening. Olin representatives obtained 80 ml.

7. Results of Investigation

7.2 Sampling procedures and screening results:

7.2.1 Groundwater sampling procedures - continued

Olin Well GW-6 (Station 010, Sample #70828):

Depth of well: 15' 1"

Depth to water (Static level): 5'11"

Volume purged prior to sampling: 3 1/2 gallons

Samples taken: E & E obtained (1) 40 ml VOA vial with 10% head space for screening. Olin representatives obtained 80 ml.

Olin Well GW-7 (Station 011, Sample #70811):

Depth of well: 16' 0"

Depth to water (static level): 5'4"

Volume purged prior to sampling: under two gallons

Samples taken: No samples taken.

Note: Well was clogged with wasps.

Olin Well GW-2 (Station 012, Sample #70812)

Depth of well: 16' 9"

Depth to water (static level): 12' 5"

Note: This well was highly contaminated with an oily substance, most likely dioctylphthalate.

Volume prior to sampling: Because of the depth of the well and the high viscosity of the contaminant, it was not possible to obtain more than a quart of material from this well. The intent was to take sufficient volume for a priority pollutant analysis. The volume obtained was split with Olin representatives. The sample was very obviously two-phase, with a top dark brown layer and a bottom aqueous layer.

7. Results of Investigation

7.2 Sampling procedures and screening results:

7.2.2 Surface water and sediment sampling procedures:

With the exception of the priority pollutant surface water sample collected at Station 003, all sediment and surface water samples consisted of (1) 40 ml VOA vial with head space. All sediment samples were collected with a four-inch diameter soil auger. The locations of all sampling stations are shown in Figure 10.

Station 100 - Sample #70824

A sample from the sulfate sludge landfill was taken approximately one foot below the surface. The sample was greyish-white in color and had the consistency of wet clay.

Station 101 - Sample #70817

A mucky sediment sample was taken in the drainage channel approximately six inches below the channel bottom. A surface water sample was also collected at this station. The water was clear and colorless.

Station 102 - Sample #70807

A surface water sample was initially taken. Upon seeing a bubble of material breakout onto the water surface in a rainbow - colored sheen, it was decided to take a sediment sample. The sediment sample was taken approximately six inches below the channel bottom. It was black and impregnated with a thick black oily substance. A heavy rainbow-colored sheen covered the entire drainage channel as oily material seeped to the surface of the water from the hole made by the auger. Another surface water sample was subsequently taken. The water was clear and slightly brownish in color.

Station 103 - Sample #70821

A surface water sample was taken from a large puddle of standing water located in a depression resulting from recent (?) earth movement. The water was clear and colorless.

7. Results of Investigation

7.2 Sampling procedures and screening results:

7.2.2 Surface water and sediment sampling procedures:

Station 104 - Sample #70822

A surface water sample was taken. The water was clear and colorless.

Station 105 - Sample #70823

A surface water sample was taken. The water was clear and colorless.

Station 106 - Sample #99999

A black mucky sediment sample was taken approximately six inches below the surface. The auger hole was allowed to recharge with water and a water sample was subsequently taken. The water was clear and colorless.

Station 107 - Sample #70808

A surface water sample was taken. The water was clear and colorless and was moving swiftly in the channel.

Station 108 - Sample #70810

A sandy, grey-colored, water soaked sediment sample was taken approximately four feet below the ground surface. Material above the sample location was light-tan, coarse grained sand.

Station 109 - Sample #99998

A black, mucky sediment sample was taken approximately six inches below the surface. The entire area where this sample was taken was resilient when jumped upon. The collected sample had the odor of fuel oil.

Station 110 - Sample #99997

A dark, fine-grained soil sample was collected approximately six inches below the grou

7. Results of Investigation

7.2 Sampling procedures and screening results:

7.2.2 Surface water and sediment sampling procedures:

Station 003 - Sample #70803

A priority pollutant sample was taken of the surface water. There was a thin sheen on the surface of the water. The water was clear and colorless.

Station 004 - Sample #70814

A sample was taken of the standing water at the outlet of the culvert. The water which was clear and colorless was covered with the thick sheen.

Station 005 - Sample #70815

A sample was taken of the surface water. It was clear and colorless.

7.2.3 Screening results of surface water and groundwater samples

The samples specified below were screened on a Century Portable Gas Chromatograph using a T-12 column. All samples were shaken vigorously for two minutes and allowed to reach ambient temperature. 250 microliters (ul) of the headspace vapor were then withdrawn and injected directly into the detector to measure the total volatile hydrocarbon content. Those samples showing volatiles were then run again, but in the gas chromatograph mode. The results follow:

Olin Well GW-1 - Sample #70818

Large methane peak, followed by smaller, fast second peak - unidentified, possibly a higher alkane

Olin Well GW-5 - Sample #70809

Methane peak, no other volatiles within detection limit pH of sample = 6-8. Sample submitted for priority pollutant analysis.

Olin Well GW-10 - Sample #70816

Large methane peak, followed by smaller, fast second peak - unidentified, possibly a higher alkane. Sample submitted for priority pollutant analysis.

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7. Results of Investigation

7.2 Sampling procedures and screening results - continued

7.2.3 Screening results of surface water and groundwater samples

Olin Well GW-12 - Sample #70825

No volatiles present within detection limits. pH of sample = 6-8.

Olin Well GW-8 - Sample #70826

No volatiles present within detection limits. pH of sample 4-6.

Olin Well GW-11 - Sample #70827

Large methane peak, followed by smaller, fast second peak - unidentified, possibly a higher alkane.

Olin Well GW-6 - Sample #70828

Methane peak, followed by small fast peak - unidentified, possibly a higher alkane.

Olin Well GW-7 - Not analyzed

No sample obtained

Olin Well GW-2 - Not analyzed

Olin has confirmed presence of dioctylphthalate in the well.

Olin/West End of Central Pond - Sample #70822

No volatiles within detection limits. pH = 6-8

Olin/Jewel Drive side of culvert - Sample #70817

No volatiles within detection limits. pH = 6-8

Olin/Channel near well #5 - Sample #70803

Methane, then very small second peak - not identified. Sample submitted for priority pollutant analysis.

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OW 005025

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7. Results of Investigation

7.2 Sampling procedures and screening results - continued

7.2.3 Screening results of surface water and groundwater samples

Olin/Culvert southeast of sulfate lagoon - Sample #70807
Methane, then very small second peak - not identified.

Olin/East End of Central pond - Sample #70823
No volatiles present within detection limits. pH of sample 6-8.

Olin/Non Contact Cooling Water - west end of warehouse - Sample #70810
Methane present.

Olin/North Drainage Ditch - Sample #70815
Methane present. No other volatiles within detection limit. pH = 6-8.

Olin Standing Water near Well GW-12 - Sample #70821
No volatiles present within detection limits. pH = 6-8

Olin/Surface Water near vegetative stress area - Sample #99999
No volatiles present within detection limits. pH = 6-8.

7.2.4 Screening results of soil and sediment samples.

An attempt will be made to analyze for the presence of volatile vapors in these samples by allowing the samples to reach room temperature and injecting a portion of the head space vapor into the portable GC. Since the column of the portable GC operates at ambient temperature, it is not practical to heat up the sediment samples to drive off vapor, as the vapor might condense in the column and thereby destroy the column.

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7. Results of Investigation

7.2 Sampling procedures and screening results - continued

7.2.5 Photographs of Sampling Points

Figures 13 through 30 are photographs of the sampling locations.

8. Recommendations:

E & E has made arrangements with Olin to collect a priority pollutant sample at Well GW-2 to determine the extent of contamination. A pump capable of sampling this well is on order. With this exception, no additional on-site inspection or sampling activity of this site is warranted at this time. Should the priority pollutant analyses indicate unanticipated contamination, the need for re-entry will be evaluated.

The East Drainage Ditch should be examined regularly to determine if the absorbant pads now in place are preventing the entry of phthalates, amines and phenols into the ditch. There is an obvious need for remedial action to eliminate the ongoing contamination of a Class B stream (East Drainage Ditch) with priority pollutants including dioctylphthalate and possibly diphenyl hydrazine as well as various phenols and amines.

To avoid repeated spills of hazardous materials from the tank farm, it is recommended that an impervious base and confinement structure be provided.

The release of heavy fuel oil from oil impregnated soil into the North Drainage Ditch is taking place. The placing of absorbant pads at the entrance of this ditch into the East Drainage Ditch is recommended.

9. Conclusions:

The seepage from Olin property of at least one priority pollutant (dioctylphthalate) into a Class B stream is presently occurring.

This contamination is very likely entering the Aberjona River by way of Halls' Brook Storage Area.

A monitoring well located on Olin property is grossly contaminated with at least one priority pollutant.

There is extensive contamination of soil on Olin property with heavy residual oil.

A completed Potential Hazardous Waste Site - Site Inspection Report is included in Appendix B.

Figure 13: Sampling Station 001

Figure 14: Sampling Station 002

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Site Insp.

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Figure 15: Sampling Station 003

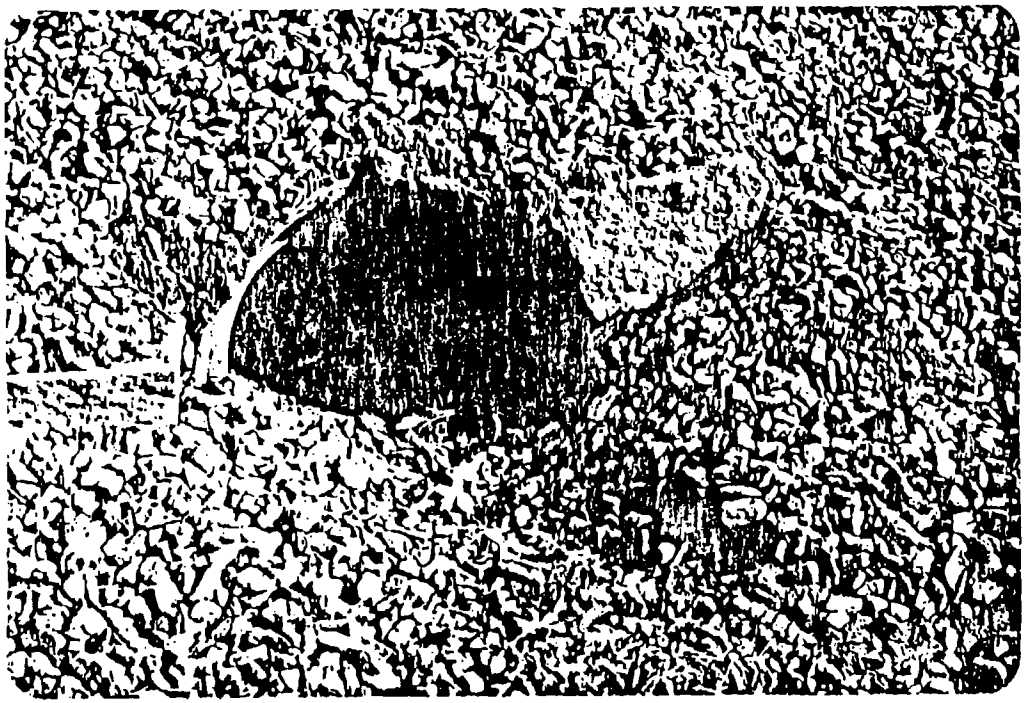

Figure 16: Sampling Station 004

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Figure 17: Sampling Station 005

Figure 18: Sampling Station 006

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Figure 19: Sampling Station 007

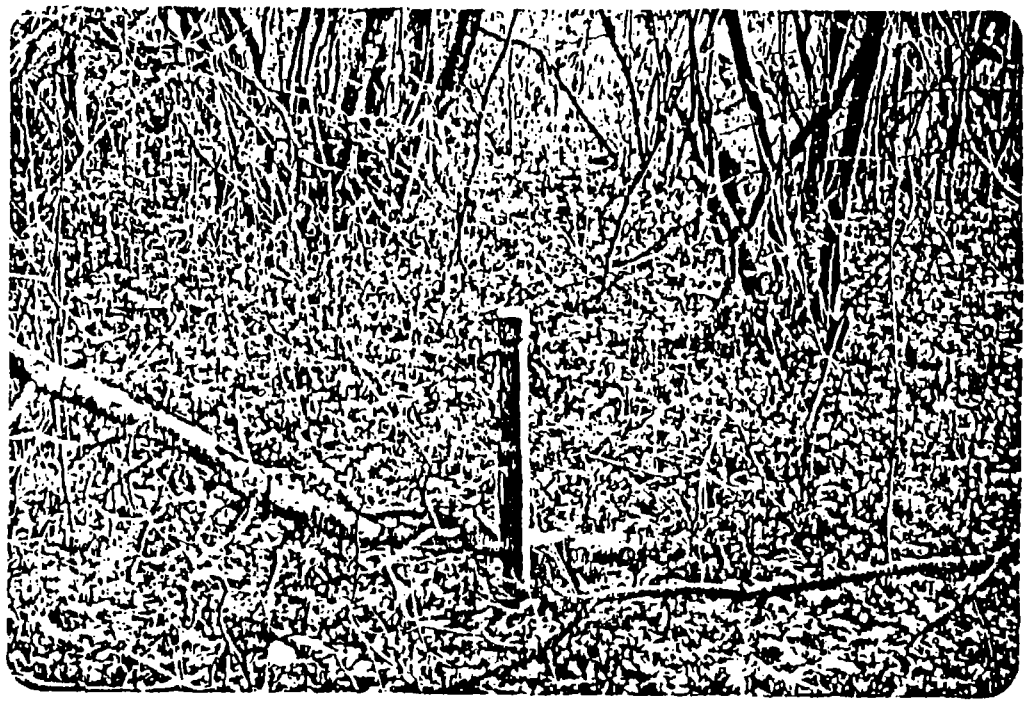

Figure 20: Sampling Station 008

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Figure 21: Sampling Station 009

Figure 22: Sampling Station 010

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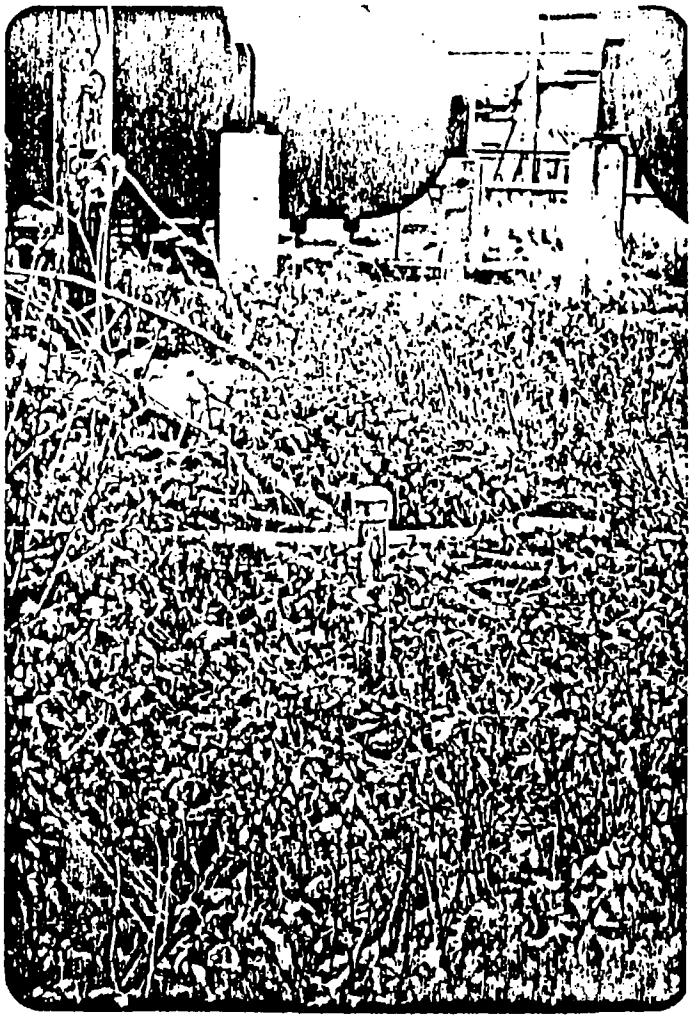

Figure 23: Sampling Station 012

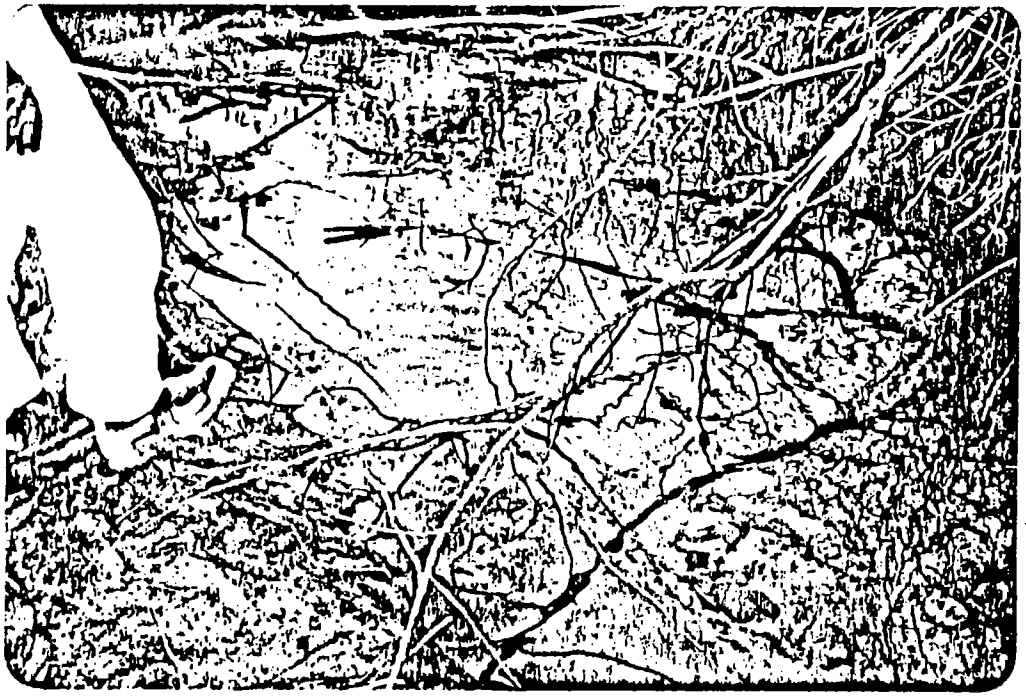

Figure 24: Sampling Station 102

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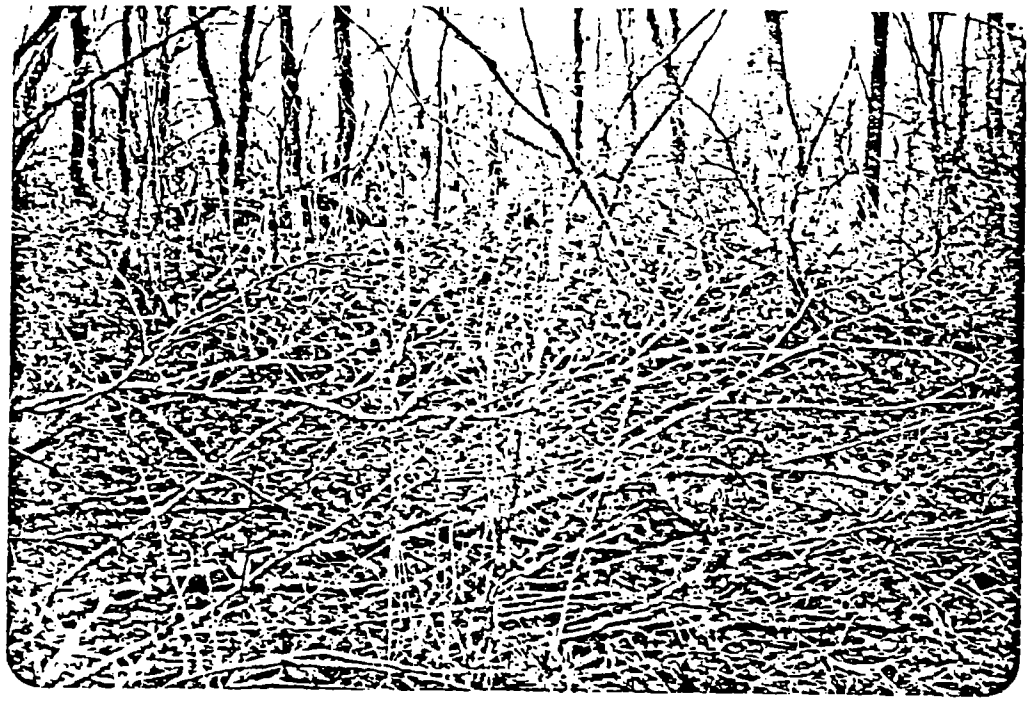

Figure 25: Sampling Station 103

Figure 26: Sampling Station 104

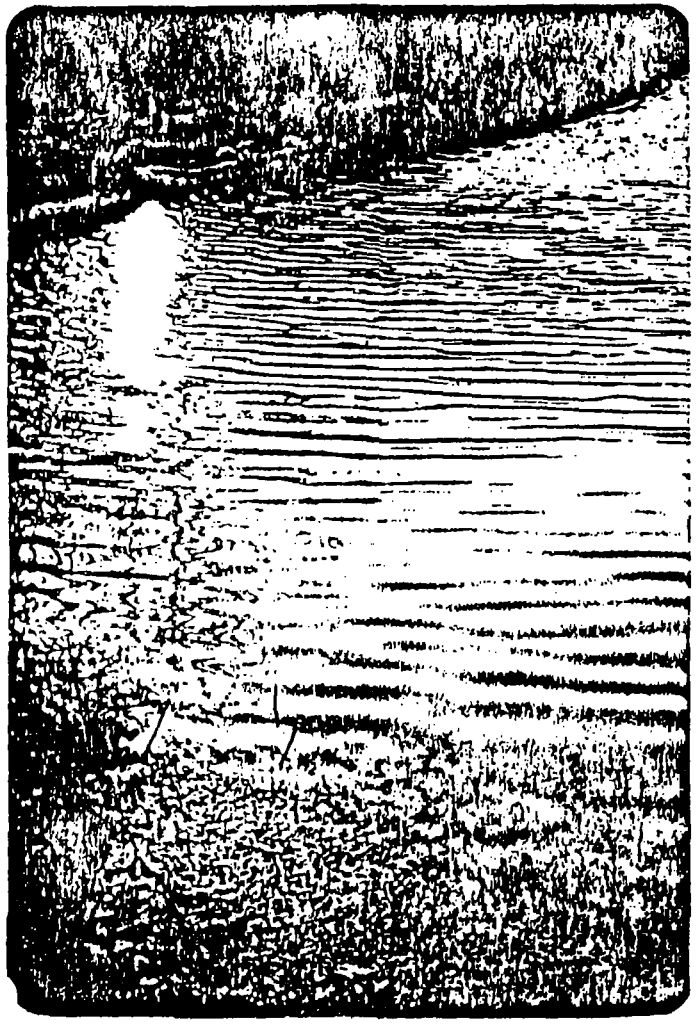

Figure 27: Sampling Station 105

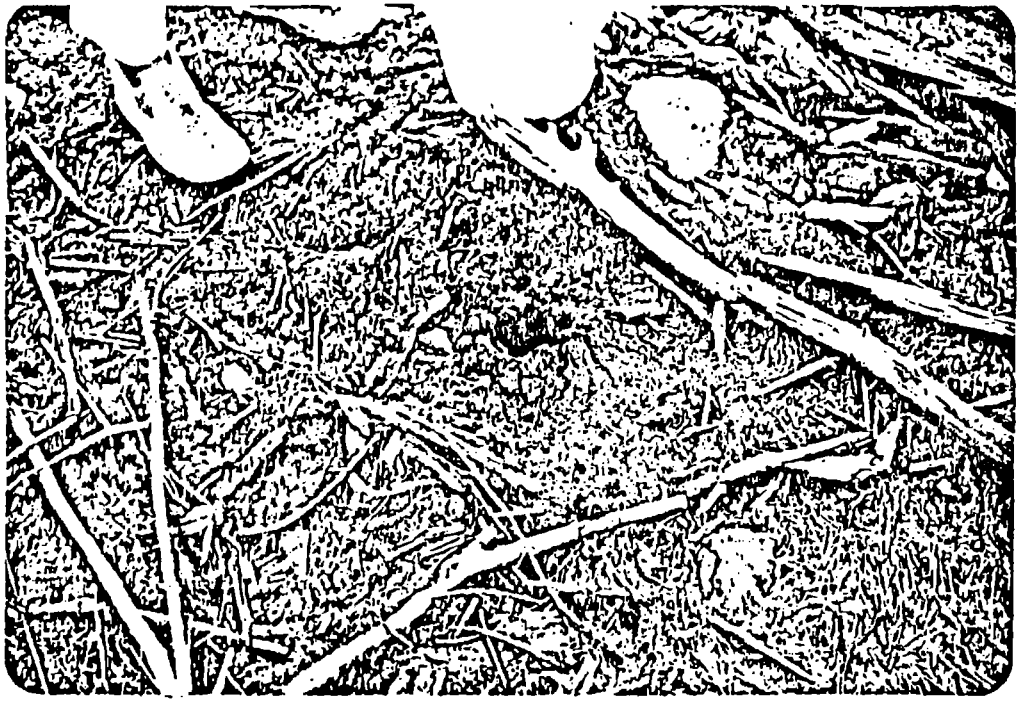

Figure 28: Sampling Station 106

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Figure 29: View toward the northwest from Sampling Station 106

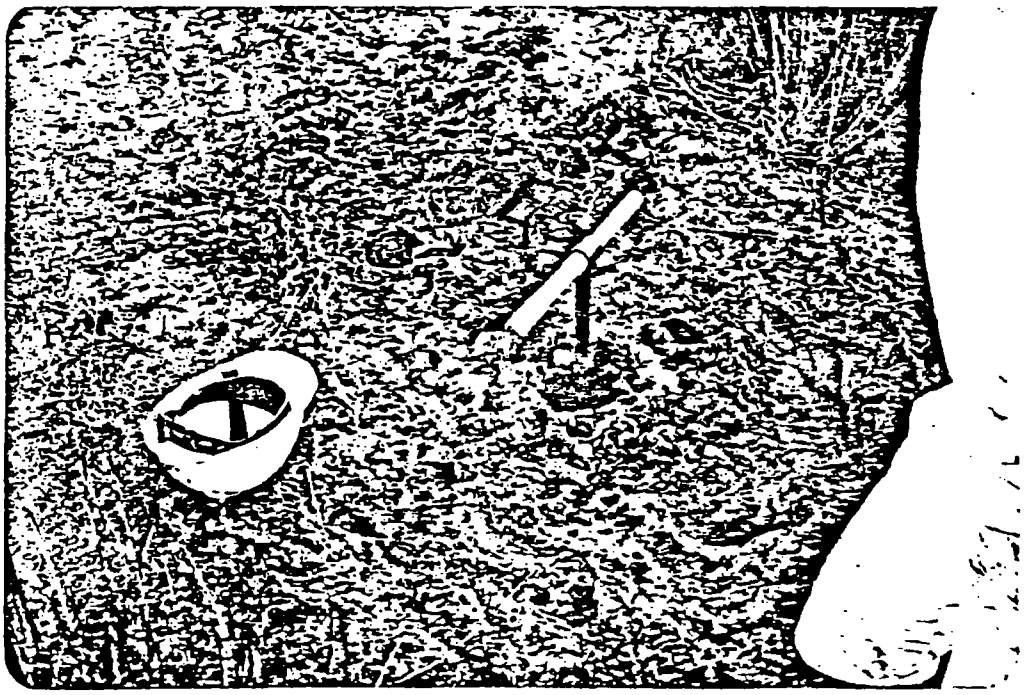

Figure 30: Sampling Station 108

0041-0197

OW 005037

APPENDIX A

SITE SAFETY PLAN

and

REPORT

0041-0198

OW 005038

SITE SAFETY PLAN

ITE: Olin Chemicals Group Plant DATE: 10/23/80 TDD #: 1-80

OCATION: Eames Street, Wilmington, MA PREPARED BY: Fucarile/Desmarais

NVESTIGATIVE OBJECTIVE(S): To gather information necessary to determine the potential for R and/or 311/104 Clean Water Act action PROPOSED DATE OF INVESTIGATION: 11/5

ACKGROUND REVIEW: Complete: x Preliminary: ___

OCUMENTATION/SUMMARY: OVERALL HAZARD: Serious ___ Moderate x Low ___ U

SITE/WASTE CHARACTERISTICS

ASTE TYPE(S): Liquid x Solid x Sludge x Gas ___

HARACTERISTIC(S): Corrosive x Ignitable ___ Radioactive ___ Volatile x Toxic ___ React. ___ Unk. ___

ACILITY DESCRIPTION: Size: 53 acres Buildings: approx. 7 buildings 11 storage tanks, 12 wells

Topography: embankment to ditch at RR tracks, marshland at back of property

Principal Disposal method (type and location): formerly three acid pits, now rectang settling basins used for gypsum containment, storage tanks

Unusual Features (dike integrity, power lines, terrain, etc.) boardered by B&M RR tra

Status: (open, closed, unknown) op

ISTORY: (worker or non-worker injury; complaints from public; previous agency action): Analysis of sludge Nat'l Polychemicals, Inc. 1970 leaching into Aberjona. Geotechnical Engineers Study PVC liner leaks in 1979, Complaints to MDC regarding high chloride, sulfat and ammonia levels in sewer. Former Stepan employee unofficially reported phosphorus tric dumped on ground and residues buried near wetlands. He was taken to hospital for oxygen because he was overcome by ammonia fumes inside building.

HAZARD EVALUATION

Moderate Hazard, After close examination of the Geotech. Study, Nat'l Polychemical Study e The only priority pollutants presumed to be on site are toluene and dioctylphalate. It is highly likely that toluene would have volatilized soon after a spill. Dioctylphalate is n a vapor hazard. Toluene could be a vapor hazard if it is leaking. Ultra twins should be Also, could have acidic or basic leachates thus rubber gloves and boots and apron protecti Eye protection taken care of by Ultra Twin masks. Other non priority pollutants which may be on site could be ingestion hazards; therefore, reasonable hygene should be practiced.

0041-0199

OW 005039

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FIELD INVESTIGATION TEAM - REGION I

WORK PLAN INSTRUCTIONS

I. PERIMETER ESTABLISHMENT: Map/Sketch Attached x [c] Site Control ____
Public Perimeter Identified x Zone(s) of Contamination Identified x
NOTES:

[c] areas of special safety concern identified

II. PERSONAL CLOTHING:
Level of Protection: A ____ B ____ C x D ____
Modifications: ____

Surveillance Equipment and Materials: TLD badges

II. DECONTAMINATION PROCEDURES:
Hot Line Location (initial): at public perimeter access
Command Post Location (initial): at public perimeter access
PDS Stations: 1. boot & glove wash 2. boot & glove rinse
3. ____ 4. ____ 5. ____
Equipment and Materials/Special Facilities: ____

IV. SITE ENTRY PROCEDURES:
Team Size: E & E 5 State ____ Other ____
Entry Briefing (date) day before site entry
Station Designation (name/responsibility): 1. Dave Cook, Project Leader
2. Paul Clay, Equipment/Work party 3. Lori Fucarile, Safety
4. Robert Palermo, Work party 5. Paul Exner, Work party
6. ____ 7. ____
Work Schedule/Limitations:
Site entry team will not be entering any buildings. Entry to (outside) area will be only after receiving permission from Olin Chemical.
Notes: ____

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ECOLOGY AND ENVIRONMENT, INC.

FIELD INVESTIGATION TEAM - REGION I

SITE SAFETY PLAN SUMMARY

NAME OF SITE: Olin Chemical Group DATE: 10/23/80

TDD #: F-1-8005-01F

Location of site: Eames Street, Wilmington, MA

Directions to site: Washington Street North to West Street. Left on Industrial Way, right on Woburn Ave., then left on Eames Street.

Project Leader/Site Entry Leader: David Cook

Safety Person: Lori Fucarile

Equipment Person: Paul Clay

Work Party: Paul Clay, David Cook, Palermo, Paul Exner

Reason for Site Entry: to determine potential for RCRA/311/104 action

Special Hazards: Volatile hydrocarbons may be present; acid or base may be pre

Hazard Assessment: (H, M, L, Unk.) Moderate, High levels of contaminants not expected

Level of Protection: Level C

Required Protective Equipment:

1. Ultra Twin w/cartridge
2. Robert Shaw
3. Tyveks (Chem. Resistant)
4. Gloves
5. boots
6. hard hats
7. TLD badges
8. Butyl rubber aprons
9. Explosimeter
10. O_2 Meter

OW 005041

0041-0201

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FIELD INVESTIGATION TEAM - REGION I

WORK PLAN INSTRUCTIONS - continued

V. EMERGENCY PRECAUTIONS:

ACUTE EXPOSURE SYMPTOMS	FIRST AID
Volatile hydrocarbon exposure: lightheadedness, nausea	Get to fresh air, administer oxygen if required. Seek medical aid

HOSPITALS/POISON CONTROL CENTERS (address, telephone number)

See Resources List

EMERGENCY TRANSPORTATION SYSTEMS (Fire, police, ambulance)

See Resources List

VI. EMERGENCY ROUTES

Choate Hospital, Left from Olin gate onto Eames St. to Route 38, left on 38 (Main Street) straight (Under 128) to Woburn Center approx 1.5 miles to Warren Ave. Choate Hospital is at top of hill.

EQUIPMENT CHECKOUT

OW 005042

SCBA		Cylinders			Eye Wash Unit
Ultratwin	x	Cartridges	x		First Aid Kit
Explosimeter			x		Drinking Water Supply
O_2 Indicator			x	0041-0202	Personal Clothing
Draeger Pump	x	Tubes	x		Decontamination Mat'ls.
Radiation Survey Meter					

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ECOLOGY AND ENVIRONMENT, INC. - REGION I

SITE: Olin Chemical Group Plant TDD #: F-1-8005-01F DATE: 10/23/80

RESOURCES
(locate resources on area map)

	NAME	TOWN	PHONE	NOTIFIED YES/NO
FIRE	Wilmington	Wilmington	658-3200	no
POLICE	Wilmington	Wilmington	658-3200	no
AMBULANCE	Wilmington	Wilmington	658-3200	no
HOSPITAL ER	Choate Hospital	Warren Ave., Woburn	933-6700	no
WATER SUPPLY	on van			
TELEPHONE	Olin Chemical	Eames St, Wilmington, MA	933-4240	yes
RADIO COMMUNICATIONS	NA			
AIRPORT	NA			
HELIPORT AREA	NA			
EXPLOSIVES UNIT	State Police	S. Lynnfield	593-1122	no
EPA CONTACT	Rick Leighton	Lexington/NERL	861-6700	yes

LIST OTHER RESOURCES:

OW 005043

0041-0203

EMERGENCY NUMBERS

E & E, Inc., Woburn	(617) 935-0228	(0238) (4008)
E & E, Inc. Arlington, VA	(703) 522-6065	24 hr. number - call forwarding
Dr. Harbison - Vanderbilt	(615) 322-4754	
Dr. Harbison - home	(615) 747-6353	24 hr. number - 9 second message
Robert Young - home	(617) 545-4905	
Anne Marie Desmarais - home	(617) 897-5306	
Peter Bent Brigham, Occup. Ind. Health Clinic:		
Dr. Speizer, Dr. Shenker, Kay Jordan	(617) 732-5983	
24 hour number - ask for bellboy 904	(617) 732-6000	

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ECOLOGY AND ENVIRONMENT, INC.
FIELD INVESTIGATION TEAM - REGION I

SITE SAFETY REPORT

NAME OF SITE: Olin Chemicals Group DATE OF ENTRY: 11/12/80
TDD #: F-1-8005-01F

Reason for Site Entry: To obtain information and samples for possible RCRA and/or 311/104 Clean Water Act actions regarding Olin Chemicals Group.

Personnel on Site:
Site Entry Leader: David Cook
Safety Person: Lori Fucarile
Equipment Person: Paul Clay
Work Party: Paul Clay, Glenn Smart, Margret Hanley, Richard DiNitto

Other E & E Personnel:

Other Personnel on Site: Ted Groom, M. Ahsah, and D.Vaughn (Olin Research)

Explain Any YES Answer on an Attached Sheet:	YES	NO
1. Was the Safety Plan followed as presented? Explain any and all deviations in full.	x	
2. Did any team member report chemical exposure?		x
3. Did any team member report illness, discomfort, or unusual symptoms?		x
4. Did any team member report environmental problems? (heat, cold, etc.)		x
5. Did any team member report injury?		x
6. Did the site entry have to be curtailed for any reason? (rain, lack of air, etc.)		x
7. Were any emergency services or resources utilized?		x
8. Were there any unusual occurences?		x
9. Was the Safety Plan adequate?	x	

10. What changes would you recommend? None

0041-0204

OW 005044

APPENDIX B

POTENTIAL HAZARDOUS WASTE SITE

SITE INSPECTION REPORT

0041-0205

OW 005045

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

REGION	SITE NUMBER (to be assigned by Hq)
I	

GENERAL INSTRUCTIONS: Complete Sections I and III through XV of this form as completely as possible. Then use the information on this form to develop a Tentative Disposition (Section II). File this form in its entirety in the regional Hazardous Waste Log File. Be sure to include all appropriate Supplemental Reports in the file. Submit a copy of the forms to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Tack Force (EN-335); 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME	B. STREET (or other identifier)		
Olin Chemicals Group-Wilmington Plant	Eames Street		
C. CITY	**D. STATE**	**E. ZIP CODE**	**F. COUNTY NAME**
Wilmington	MA	01887	Middlesex

G. SITE OPERATOR INFORMATION

1. NAME		2. TELEPHONE NUMBER	
Mr. Ron McBrien (Plant Manager)		933-4240	
3. STREET	**4. CITY**	**5. STATE**	**6. ZIP CODE**
Eames Street	Wilmington	MA	01887

H. REALTY OWNER INFORMATION (if different from operator of site)

1. NAME		2. TELEPHONE NUMBER	
N/A			
3. CITY		**4. STATE**	**5. ZIP CODE**

I. SITE DESCRIPTION

Complex of Chemical Process Buildings on a large wooded lot

J. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE

II. TENTATIVE DISPOSITION (complete this section last)

A. ESTIMATE DATE OF TENTATIVE DISPOSITION (mo., day, & yr.)

B. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☒ 2. MEDIUM ☐ 3. LOW ☐ 4. NONE

C. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
David K. Cook	935-4008	12/4/80

III. INSPECTION INFORMATION

A. PRINCIPAL INSPECTOR INFORMATION

1. NAME	2. TITLE
David K. Cook	Sr. Geological Engineer

3. ORGANIZATION	4. TELEPHONE NO. (area code & no.)
Ecology and Environment, Inc. (E&E)	617-935-4008

B. INSPECTION PARTICIPANTS

1. NAME	2. ORGANIZATION	3. TELEPHONE NO.
David K. Cook	Ecology and Environment, Inc.	935-4008
Paul Clay	Ecology and Environment, Inc.	935-4008
Richard DiNitto	Ecology and Environment, Inc.	935-4008
Margret Hanley	Ecology and Environment, Inc.	935-4008
William Norman	Ecology and Environment, Inc.	935-4008
Glenn Smart	Ecology and Environment, Inc.	935-4008
Lori Fucarile	Ecology and Environment, Inc.	935-4008

C. SITE REPRESENTATIVES INTERVIEWED (corporate officials, workers, residents)

1. NAME	2. TITLE & TELEPHONE NO.	3. ADDRESS
David Vaughn	Environmental Coordinator 203-356-3156	Hartford, CT
Ted Groom	Chemist 203-356-3156	Hartford, CT
M. Ahsah	Chemist 933-4240	Wilmington, MA

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0041-0206

Continued From Front

III. INSPECTION INFORMATION (continued)

D. GENERATOR INFORMATION (sources of waste)

1. NAME	2. TELEPHONE NO.	3. ADDRESS	4. WASTE TYPE GENERATE
Olin		Wilmington	Chemicals associat with rubber blowin agent manufacture

E. TRANSPORTER/HAULER INFORMATION

1. NAME	2. TELEPHONE NO.	3. ADDRESS	4. WASTE TYPE TRANSPORT
N/A			

F. IF WASTE IS PROCESSED ON SITE AND ALSO SHIPPED TO OTHER SITES, IDENTIFY OFF-SITE FACILITIES USED FOR DISPOSAL.

1. NAME	2. TELEPHONE NO.	3. ADDRESS
N/A		

G. DATE OF INSPECTION (mo., day, & yr.)	H. TIME OF INSPECTION	I. ACCESS GAINED BY: (credentials must be shown in all cases)
11/12/80	0900-1630	[X] 1. PERMISSION [ ] 2. WARRANT

J. WEATHER (describe)

Clear/Cold

IV. SAMPLING INFORMATION

A. Mark 'X' for the types of samples taken and indicate where they have been sent e.g., regional lab, other EPA lab, contractor, etc. and estimate when the results will be available.

1. SAMPLE TYPE	2. SAMPLE TAKEN (mark 'X')	3. SAMPLE SENT TO:	4. DATE RESULTS AVAILABLE
a. GROUNDWATER	X	Regional lab (2 priority)	1/10/81
b. SURFACE WATER	X	Regional lab (1 priority)	1/10/81
c. WASTE			
d. AIR			
e. RUNOFF			
f. SPILL			
g. SOIL	X	Regional lab	1/10/81
h. VEGETATION			
i. OTHER (specify)			

B. FIELD MEASUREMENTS TAKEN (e.g., radioactivity, explosivity, PH, etc.)

1. TYPE	2. LOCATION OF MEASUREMENTS	3. RESULTS
Explosivity	Various	Consistently 0
O_2 Meter	Various	Consistently 20
pH	All Well Samples	6-8

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Continued From Page 2

IV. SAMPLING INFORMATION (continued)

C. PHOTOS

1. TYPE OF PHOTOS
   [X] a. GROUND [X] b. AERIAL
2. PHOTOS IN CUSTODY OF: E&E

D. SITE MAPPED?

[X] YES. SPECIFY LOCATION OF MAPS: E&E

E. COORDINATES

1. LATITUDE (deg.-min.-sec.): 42° 31' 50"
2. LONGITUDE (deg.-min.-sec.): 71° 9' 30"

V. SITE INFORMATION

A. SITE STATUS

[X] 1. ACTIVE (Those inductrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)

[ ] 2. INACTIVE (Those sites which no longer receive wastes.)

[ ] 3. OTHER (specify): _____ (Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)

B. IS GENERATOR ON SITE?

[ ] 1. NO [X] 2. YES (specify generator's four-digit SIC Code): 2821

C. AREA OF SITE (in acres): 53

D. ARE THERE BUILDINGS ON THE SITE?

[ ] 1. NO [X] 2. YES (specify): approx. 20 Process Buildings

VI. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

'X'	A. TRANSPORTER	'X'	B. STORER	'X'	C. TREATER	'X'	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK	X	4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY	X	4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND	X	5. CHEM./PHYS./TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY		8. OTHER (specify):
					9. OTHER (specify):		Possible buried drums

E. SUPPLEMENTAL REPORTS: If the site falls within any of the categories listed below, Supplemental Reports must be completed. Indicate which Supplemental Reports you have filled out and attached to this for..

[X] 1. STORAGE [ ] 2. INCINERATION [ ] 3. LANDFILL [ ] 4. SURFACE IMPOUNDMENT [ ] 5. DEEP WELL

[ ] 6. CHEM/BIO/PHYS TREATMENT [ ] 7. LANDFARM [ ] 8. OPEN DUMP [ ] 9. TRANSPORTER [ ] 10. RECYCLOR/RECLAIMER

VII. WASTE RELATED INFORMATION

A. WASTE TYPE

[X] 1. LIQUID [ ] 2. SOLID [X] 3. SLUDGE [ ] 4. GAS

B. WASTE CHARACTERISTICS

[X] 1. CORROSIVE [ ] 2. IGNITABLE [ ] 3. RADIOACTIVE [X] 4. HIGHLY VOLATILE

[X] 5. TOXIC [ ] 6. REACTIVE [X] 7. INERT [ ] 8. FLAMMABLE

[ ] 9. OTHER (specify):

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

Yes-inventories

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Continued From Front

VII. WASTE RELATED INFORMATION *(continued)*

2. Estimate the amount *(specify unit of measure)* of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT UNK	AMOUNT	AMOUNT UNK	AMOUNT	AMOUNT
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
X (1) PAINT, PIGMENTS	X (1) OILY WASTES	X (1) HALOGENATED SOLVENTS	X (1) ACIDS	X (1) FLYASH	X (1) LABORATORY, PHARMACEUT.
(2) METALS SLUDGES	X (2) OTHER *(specify)*:	(2) NON-HALOGNTD. SOLVENTS	X (2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER *(specify)*:	(3) CAUSTICS	(3) MILLING/MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMELTING WASTES	(4) MUNICIPAL
(5) OTHER *(specify)*:			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER *(specify)*:
			(6) CYANIDE	(6) OTHER *(specify)*:	
			X (7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER *(specify)*: Phthalates Amines		

D. LIST SUBSTANCES OF GREATEST CONCERN WHICH ARE ON THE SITE *(place in descending order of hazard)*

1. SUBSTANCE	2. FORM *(mark 'X')* a. SOLID	b. LIQ.	c. VAPOR	3. TOXICITY *(mark 'X')* a. HIGH	b. MED.	c. LOW	d. NONE	4. CAS NUMBER	5. AMOUNT	6. UNIT
Dioctylphthalate		X				X			15000	gal.
Diphenolamine		X			X				UNK	
Dioctylamine		X			X				UNK	
Nonyl & DiNonyl Phenol		X			X				16700	gal.
Acids - Sulfuric		X		X					UNK	
Phosphorus Trichloride		X	X	X					UNK	

VIII. HAZARD DESCRIPTION

FIELD EVALUATION HAZARD DESCRIPTION: Place an 'X' in the box to indicate that the listed hazard exists. Describe the hazard in the space provided.

[X] A. HUMAN HEALTH HAZARDS

From phthalates & phenols in East Drainage Ditch

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OW 005049

Continued From Page 4

VIII. HAZARD DESCRIPTION *(continued)*

[X] B. NON-WORKER INJURY/EXPOSURE

See A

[ ] C. WORKER INJURY/EXPOSURE

[ ] D. CONTAMINATION OF WATER SUPPLY

[ ] E. CONTAMINATION OF FOOD CHAIN

[X] F. CONTAMINATION OF GROUND WATER

Phthalates & Phenols & amines in monitoring wells

[X] G. CONTAMINATION OF SURFACE WATER

Phthalates & Phenols & amines seeping into East Drainage Ditch

Continued From Front

VIII. HAZARD DESCRIPTION *(continued)*

[X] H. DAMAGE TO FLORA/FAUNA

Large areas of dead trees on Olin property

[ ] I. FISH KILL

[ ] J. CONTAMINATION OF AIR

[ ] K. NOTICEABLE ODORS

[X] L. CONTAMINATION OF SOIL

Seepage of phthalates, amines & phenols into soil

[ ] M. PROPERTY DAMAGE

Continued From Page 6

VIII. HAZARD DESCRIPTION *(continued)*

☐ N. FIRE OR EXPLOSION

☒ O. SPILLS/LEAKING CONTAINERS/RUNOFF/STANDING LIQUID

Leaking tanks caused the surface water and groundwater contamination

☐ P. SEWER, STORM DRAIN PROBLEMS

☐ Q. EROSION PROBLEMS

☐ R. INADEQUATE SECURITY

☐ S. INCOMPATIBLE WASTES

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OW 005052

VIII. HAZARD DESCRIPTION (continued)

☐ T. MIDNIGHT DUMPING

☐ U. OTHER (specify):

IX. POPULATION DIRECTLY AFFECTED BY SITE

A. LOCATION OF POPULATION	B. APPROX. NO. OF PEOPLE AFFECTED	C. APPROX. NO. OF PEOPLE AFFECTED WITHIN UNIT AREA	D. APPROX. NO. OF BUILDINGS AFFECTED	E. DISTANCE TO SITE (specify units)
1. IN RESIDENTIAL AREAS	?	?	Aberjona Riv.	1 Mile
2. IN COMMERCIAL OR INDUSTRIAL AREAS	N/A			
3. IN PUBLICLY TRAVELLED AREAS	N/A			
4. PUBLIC USE AREAS (parks, schools, etc.)	?	?	Aberjona Riv.	1 Mile

X. WATER AND HYDROLOGICAL DATA

A. DEPTH TO GROUNDWATER (specify unit)	B. DIRECTION OF FLOW	C. GROUNDWATER USE IN VICINITY
approx. 10	SE	Industrial
D. POTENTIAL YIELD OF AQUIFER	**E. DISTANCE TO DRINKING WATER SUPPLY (specify unit of measure)**	**F. DIRECTION TO DRINKING WATER SUPPLY**
> 3 MGD	5 miles	S

G. TYPE OF DRINKING WATER SUPPLY

☐ 1. NON-COMMUNITY < 15 CONNECTIONS

☒ 2. COMMUNITY (specify town): Woburn > 15 CONNECTIONS

☐ 3. SURFACE WATER

☒ 4. WELL

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Continue On Page 9

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Continued From Page 8

X. WATER AND HYDROLOGICAL DATA (continued)

H. LIST ALL DRINKING WATER WELLS WITHIN A 1/4 MILE RADIUS OF SITE

1. WELL	2. DEPTH (specify unit)	3. LOCATION (proximity to population/buildings)	4. NON-COMMUNITY (mark 'X')	5. COMMUNITY (mark 'X')
None				

I. RECEIVING WATER

1. NAME: Aberjona River

☐ 2. SEWERS ☒ 3. STREAMS/RIVERS ☐ 4. LAKES/RESERVOIRS ☐ 5. OTHER (specify):

6. SPECIFY USE AND CLASSIFICATION OF RECEIVING WATERS

Class B Stream being directly contaminated. Water unused

XI. SOIL AND VEGITATION DATA

LOCATION OF SITE IS IN:

☐ A. KNOWN FAULT ZONE ☐ B. KARST ZONE ☐ C. 100 YEAR FLOOD PLAIN ☐ D. WETLAND

☐ E. A REGULATED FLOODWAY ☐ F. CRITICAL HABITAT ☐ G. RECHARGE ZONE OR SOLE SOURCE AQUIFER

XII. TYPE OF GEOLOGICAL MATERIAL OBSERVED

Mark 'X' to indicate the type(s) of geological material observed and specify where necessary, the component parts.

'X'	A. OVERBURDEN	'X'	B. BEDROCK (specify below)	'X'	C. OTHER (specify below)
X	1. SAND		Bedrock near surface		
X	2. CLAY		at southern end of site near landfill		
	3. GRAVEL				

XIII. SOIL PERMEABILITY

☒ A. UNKNOWN ☐ B. VERY HIGH (100,000 to 1000 cm/sec.) ☐ C. HIGH (1000 to 10 cm/sec.)

☐ D. MODERATE (10 to .1 cm/sec.) ☐ E. LOW (.1 to .001 cm/sec.) ☐ F. VERY LOW (.001 to .00001 cm/sec.)

G. RECHARGE AREA

☐ 1. YES ☒ 2. NO 3. COMMENTS:

H. DISCHARGE AREA

☒ 1. YES ☐ 2. NO 3. COMMENTS:

I. SLOPE

1. ESTIMATE % OF SLOPE: ?

2. SPECIFY DIRECTION OF SLOPE, CONDITION OF SLOPE, ETC.

J. OTHER GEOLOGICAL DATA

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Continued From Front

XIV. PERMIT INFORMATION

List all applicable permits held by the site and provide the related information.

A. PERMIT TYPE (e.g., RCRA, State, NPDES, etc.)	B. ISSUING AGENCY	C. PERMIT NUMBER	D. DATE ISSUED (mo., day, & yr.)	E. EXPIRATION DATE (mo., day, & yr.)	F. IN COMPLIANCE (mark 'X')		
					1. YES	2. NO	3. UNKNOWN
None							

XV. PAST REGULATORY OR ENFORCEMENT ACTIONS

[X] NONE [ ] YES *(summarize in this space)*

NOTE: Based on the information in Sections III through XV, fill out the Tentative Disposition *(Section II)* information on the first page of this form.

0041-0215

OW 005055

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STORAGE FACILITIES SITE INSPECTION REPORT
(Supplemental Report)

INSTRUCTION
Answer and Explain as Necessary.

1. STORAGE AREA HAS CONTINUOUS IMPERVIOUS BASE
[ ] YES [X] NO

2. STORAGE AREA HAS A CONFINEMENT STRUCTURE
[ ] YES [X] NO

3. EVIDENCE OF LEAKAGE/OVERFLOW *(If "Yes", document where and how much runoff is overflowing or leaking from containment)*
[X] YES [ ] NO

Small amount seeping into nearby drainage ditch. Monitoring well grossly contaminated

4. ESTIMATE TYPE AND NUMBER OF BARRELS/CONTAINERS

5. GLASS OR PLASTIC STORAGE CONTAINERS USED
[ ] YES [X] NO

6. ESTIMATE NUMBER AND CAPACITY OF STORAGE TANKS

10 tanks, 6 in one group, 4 in another (5000 to 15000 gallon capacity)

7. NOTE LABELING ON CONTAINERS

None

8. EVIDENCE OF LEAKAGE CORROSION OR BULGING OF BARRELS/CONTAINERS/STORAGE TANKS *(If "Yes", document evidence. Describe location and extent of damage. Take PHOTOGRAPHS)*
[ ] YES [X] NO

9. DIRECT VENTING OF STORAGE TANKS
[ ] YES [X] NO

10. CONTAINERS HOLDING INCOMPATIBLE SUBSTANCES *(If "Yes", document evidence. Describe location and identity of hazardous waste. Take PHOTOGRAPHS.)*
[ ] YES [X] NO

11. INCOMPATIBLE SUBSTANCES STORED IN CLOSE PROXIMITY *(If "Yes", document evidence. Describe location and identity of hazardous waste. Take PHOTOGRAPHS.)*
[ ] YES [X] NO

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12. ADEQUATE CONTAINER WASHING AND REUSE PRACTICES
[ ] YES [ ] NO UNK

OW 005056

13. ADEQUATE PRACTICES FOR DISPOSAL OF EMPTY STORAGE CONTAINERS
[ ] YES [ ] NO Recycle N/A

APPENDIX C

July 18, 1973 letter

from

Charles P. Riley, Jr. of National Polychemicals

to

Thomas C. McMahon of Massachusetts Water Resources Commission

0041-0217

OW 005057

STEPAN
National Polychemicals Division
Eames St., Wilmington, Massachusetts

RECEIVED

JUL 26 1973

MASS. DIVISION OF
WATER POLLUTION CONTROL

McMahon, Director
th of Massachusetts
s Commission
nstall Building
ter
Street
husetts 02202.

ion:

is an item by item response to your letter of July 13, 1973.

e volume of "industrial sludge" is pure calcium sulfate (gypsum)
l been lifted out of the secondary clarifier. This material has
and has not been eroded since being placed in its present posi-
t became necessary to remove this material from the pond because
conditions were being reached as the pond had filled at a much
ate than had been anticipated due to a lower rate of compaction
olids level increased. I am sure that your Division is aware of
that Dana Perkins has been engaged to engineer a second secondary
ng pond and also a sanitary landfill for the gypsum on our property
to the Woburn City dump. The engineering work on both of these
has been progressing and Mr. Tarbell of Public Health and Mr.
Wilmington Health Officer, have made a preliminary inspection of
osed landfill area and of the secondary clarifier. It was pointed
his time that erosion had not taken place even with very heavy
The general plans as developed by our consultant, Dana Perkins,
he use of two secondary clarifier ponds with one area cleaned each
removal of the gypsum to the approved landfill area. These plans
submitted to your Division for review as soon as preliminary ap-
s obtained from Public Health.

ssion

liner in the lagoon has not been broken in two places. I can
sume that this comment refers to several channels from the lagoon
re created by the pond overflowing for a short period before the
sulfate was removed.

ls referred to were experimental borings, placed under pumping
y the D. L. Maher Company of North Reading. We were assured by
er that he had the right to conduct flow tests on these wells with-
aining permits. This flow was discontinued on February 5, 1973 and
t be restarted.

drums that receive the flow from the skimmer have been removed, the
eaned and tight housekeeping will be maintained in the future.

0041-0218 OW 005058

OW 005057

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The oil seepage which was directed to our attention by your inspectors was at the railroad ditch level about 10 - 15 feet below grade and behind our chemical storage tank farm. All tanks and lines were examined and found to be free from leakage. The soil behind the tankfarm at grade level is sandy and clean with no indications of chemical runoff. Our water pollution consultants from the Badger Corporation examined this site and have theorized that the seepage could be due to natural occuring hydrocarbons being leached from the soil at the extremely high water table that was experienced in May of this year.

We have recently examined the railroad ditch under the prevaling conditions of a much lower water table and there are now only very slight traces of oil films in the ditch. I am sure that your Division is aware that this ditch is loaded with raw sewerage emanating from above our plant site and that the bottom of the ditch exhibits concentrations of black sludge which appears to be raw sewerage derived.

At the present time, we are cooperating very closely with the Town of Wilmington, the MDC, and Public Health to eliminate all of our problem areas through approved long-term solutions. The Badger Corporation are consulting with us on the mechanics of the treatment plant with particular concentration in the area of finding more efficient sump pumps to handle our effluent streams. We have attempted to cooperate fully with your Division as evidenced by our conducting engineering personnel from other companies through our facility at Mr. Bonne's request and offering our engineering designs free of charge. However, on the inspection level, we feel that cooperation has been less than desirable. During the last inspection, your people refused my invitation to enter the office building and discuss with me their findings. They indicated to the plant people that they were "too busy" to do this. On another occasion one of your inspectors drove an automobile directly into our plant and through several hazardous operating areas to the treatment plant. I am sure that you are aware under the OSHA regulations that we are responsible for the safety of all persons who enter our plant areas and that all visitors must be equipped with the proper safety equipment at the front office.

The key personnel in this Division are ready to discuss our entire program and the individual points raised in your letter of July 13 at any time convenient to your personnel.

Very truly yours,

NATIONAL POLYCHEMICALS
A Division of Stepan Chemical Company

Charles P. Riley, Jr.

Charles P. Riley, Jr.
General Manager

0041-0219

CPR/jlp

OW 005059

EXHIBIT F

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

SAFETY & LOSS PREVENTION PROCEDURE

1.21 PLANT CONTINGENCY PLAN

OLIN CORPORATION
CHEMICALS GROUP
WILMINGTON, MASSACHUSETTS

WILMINGTON PLANT
JUNE 1982

(REPLACES PLAN OF MARCH 1981)

PREVIOUS REVISIONS

APRIL 1979

DATE: June 16, 1982

TO: Addressees

FROM: R.J. McBrien

Supersedes Emergency Plan of: March 1981

SUBJECT: Contingency Plan - Wilmington Plant

I. Purpose

The purpose of this emergency plan is to provide supervision with plans of action to cover potential problems relating to the operation of the Plant. The nature of the finished products and many of the raw materials necessitate such a plan at Wilmington. The actions, as defined by this plan, can prevent a minor occurrence from becoming a major problem and thus reduce hazardous exposure to employees and property.

II. Types of Emergencies

The following list includes those which could occur during plant operation:

(A) Product Decomposition
1. Opex
2. Kempore
3. OBSH
4. POLYZOLE AZDN

(B) Failure of Storage Tank
1. Sulfuric Acid
2. Hydrochloric (muriatic) acid
3. Ammonia Tank
4. Formaldehyde Tank
5. Hydrazine Tank
6. Sodium Chlorate Tank
7. Sodium Nitrite Tank

(C) Miscellaneous
1. Failure of PCl_3 drum
2. Employee accident (serious)
3. Employee illness (serious)
4. General Fire
5. Boiler explosion

(D) Chemical Spills or Discharges
1. Air release
2. Liquid Spill
3. Hazardous Waste Spill

III. General Procedures

In the event of Plant emergencies such as product decompositions, failure of storage tanks or a general fire, the following procedures should be followed by all employees:

(A) For listing and location of Plant Safety Equipment, see Appendix "A".

(B) EVACUATE the immediate area

(C) SOUND the appropriate alarm to give warning to all employees in the immediate area and in the general plant area. There are immediate area alarms in Plant A (Opex) + Plant C-1 (Kempore); in addition there is a general Plant alarm system that can be activated using switches located outside Plant C-3 (east wall) and outside Plant A (north wall) and Plant D (northwest).

(D) NOTIFY the Production Supervisor immediately of the incident supplying as much information as possible, such as number of Olin Personnel directly involved, the number of outside personnel in area (maintenance, truck drivers, etc.), the exact problem to the best of your knowledge, and any solutions to correct the problem.

(E) In all cases specified in Section II, the Wilmington Fire Department should be called immediately. The quickest method is to activate the fire alarm box; however, if the problem is of such minor degree, a telephone call can be made to the fire department explaining the problem and the type of assistance required. The Supervisor should designate one employee to proceed to the main gate, to wait for the arrival of the Fire Department, and direct them to the scene of the fire.

(F) The Production Supervisor should take direct control of all corrective operations. The immediate concern should be the accounting for all personnel. All other Supervisors and Plant personnel should report to the Production Supervisor.

IN AN EMERGENCY, THE PRODUCTION SUPERVISOR

IS THE COORDINATOR

(G) Key Plant operating personnel should be assigned by the Production Supervisor to go to the other process areas and secure batches in process, materials being transferred, and key equipment if it is deemed necessary.

(H) Plant operating personnel not directly involved in the emergency operation should be kept together in a safe area for either possible evacuation or as a reserve in the event of the emergency requiring additional manpower. All other personnel such as outside contractors, truck drivers and visitors should be directed away from the area to the parking area adjacent to the office building.

An alternate area, adjacent to the truck gate, should be used in the event that smoke or fumes are moving in the direction of the parking area.

All personnel not directly involved in the emergency actions should be kept out of the area.

(I) The Production Supervisor will see to the evacuation to the hospitals of injured personnel and that the Plant Manager, Production Superintendent and Maintenance Engineer are notified immediately concerning the incident. Any maintenance people required or requested by the Maintenance Engineer will be notified.

(J) In case of a fire or product decomposition, the shift mechanic should start the fire pump IMMEDIATELY. This is now necessary under any conditions, as recent drain tests have shown that our city water pressure is inadequate if a number of sprinkler heads are activated and the fire hoses turned on.

First Shift - G. Thomas/J. Slattery
Second Shift - D. McCaffery
Third Shift - D. Campbell

NOTE: If the shift mechanic is not available for any reason, the Maintenance Supervisor (first shift) or Production Supervisor (second or third shift) will start the fire pump.

(K) The Production Supervisor will take charge of all operations relating to the fire, and no sprinkler valves or fire hoses will be shut off unless directed by him or the Fire Department. When sprinkler valves are shut off at his direction, an employee will be directed to stand by the valve until the heads are replaced by Maintenance. When the Fire Department arrives, the Supervisor will contact the officer in charge and relate what type or types of material are burning. (The Wilmington Fire Department is equipped with foam units, and these should be used where applicable on tank farms or other organic chemical fires).

(L) In an emergency, the assigned sprinkler control personnel would immediately report to the control valve on the line where sprinklers were activated, check that the valve is open, and close the valve only when ordered to do so by the Production Supervisor or the Fire Department.

The sprinkler control man will stand by the control valve at all times (while in the closed position) until maintenance personnel have replaced all necessary sprinkler heads and the system is ready to be reactivated; then the control valve will be opened.

Because of the rotating schedule and the number of personnel changes, the sprinkler control man should be the chief operator who is assigned to that process building on that day.

IT IS IMPERATIVE THAT A MAN BE PHYSICALLY PRESENT

AT THE CONTROL VALVE AT ALL TIMES WHEN IT IS SHUT OFF

The purpose of this sprinkler control valve man is to turn on the flow of water to the sprinklers if the fire restarts before the spinkler heads have been replaced.

(M) The Production Supervisor should ascertain that all available internally mounted fire fighting equipment has been activated and that all available fire hoses are employed to their fullest advantage for the protection of the equipment and buildings.

The internally mounted equipment is:

1. Deluge system for dryer - Opex
2. Water system for unloader/collector - Kempore
3. Water system for grinder/collector - Kempore 200

IV Specific Procedures

The procedures are presented as a checklist and are to be used in addition to the general steps outlined in Section III.

(A) Product Decomposition

1. Opex Dryer

a. Deluge system in operation
b. All fire doors closed
c. Acid flow to reactors shut off
d. 2 hose lines in operation - 1 at rear of dryer room and 1 at north door

2. Opex Reactor

a. Water ring distributor in operation
b. All fire doors closed
c. Acid flow to reactors shut off
d. Internal alarm sounded
e. Maximum ventilation provided
f. Small hose line in operation into reactor; large hose lines employed from the north door and from the south side of the building only if the exhaust ductwork is on fire

3. KEMPORE

a. Drying system blowers and heaters shut down
b. Deluge system for both the unloader bin and dust collector in operation
c. Two (2) hose lines manned and ready to be used only if necessary; one hose line at west door and the second at the personnel door (north side of building)
d. Rotary valve on unloader bin in operation if the decomposition is taking place in the live bin or grinding mill
e. Remove as much in-process material as possible to prevent further decompostion

4. K-200 Grinding System

a. Manual deluge system for the feed bin, feeder collector and product drum in operation
b. Building alarm sounded
c. Hose line employed at West door
d. Maximum ventilation provided
e. Main electrical switches for all equipment disconnected

5. POLYZOLE AZDN

a. Store below 75°F
b. Store in loosely sealed container
c. Store in dry area
d. Store in hazardous storage area

(B) Storage Tanks

1. Sulfuric or Muriatic Acid Tanks

There are three (3) Muriatic Acid tanks, at C-1, at Plant A outisde, and at Plant A inside, and one (1) Sulfuric Acid tank west of C-1. In the event of a spill manufacturers of acids recommend flushing immediately with large quantities of water, followed by soda ash or lime to neutralize remaining traces of acid. However, small spills should be blocked from reaching storm drains by using dry sand, and the contaminated sand drummed in PE lined drums. The residue should be neutralized with soda ash or lime.

At all times, proper personal protective equipment should be used.

2. Ammonia Tanks

There is one (1) 27% ammonia tank at Plant D tank farm, one (1) by-product ammonia tank at C-3 and one (1) by-product ammonia tank at the treatment plant. All these tanks are curbed and drained to the treatment plant. In the event of a spill, flush the spill to the drains with large quantities of water.

NOTE: An ammonia spill will cause an ammonia vapor cloud. When reacting to an ammonia spill, the highest priorities are outlined in D.1.

3. Formaldehyde Tank

There is a Formaldehyde tank truck at the southeast corner of C-1. In the event of a formaldehyde spill, first follow the steps outlined in D.1, because the vapors evolved are hazardous. The spill should be prevented from reaching the storm sewer if possible, by using sand or absorbent. Afterwards the spilled material must be placed in steel drums for disposal.

4. Hydrazine Tank

There is one (1) 65% Hydrazine tank located at the Plant D tank farm. The Hydrazine tank is curbed and drained to the treatment plant. The vapors from a hydrazine spill are hazardous, so that the steps outlined in D.1 are necessary. The spilled material should be flushed to the sewer with large quantities of water, when it is safe to do so.

5. Sodium Chlorate Tank

There is one (1) Sodium Chlorate tank on the south side of C-1 and a small tank inside C-1. Both tanks are curbed or confined with the drain going to the treatment plant. While there is no vapor cloud, care should be taken not to come in contact with chlorate. All spills should be washed to the sewers immediately with large quantities of water.

6. Sodium Nitrite Tank

There is one (1) Sodium Nitrite tank south of Plant A. The tank is curbed and drains to the waste treatment plant. In the event of a spill, the spill should be flushed to the sewer with large quantities of water.

(C) Miscellaneous

1. PCl_3 Drum Spill (Phosphorus Trichloride)

All manufacturers indicate that a spill of PCl_3 should be carefully flooded with a LARGE VOLUME of water and that adequate ventilation must be provided. One supplier indicates that alternate methods are to apply a 5-10% soda ash solution to the spill or to absorb the spill in DRY sand and remove the saturated sand to an isolated area and flood it with water.

In the event of a spill put dry sand on the spill. The contaminated sand then should be placed in PE lined drums for disposal.

Note: When PCl_3 reacts with water, hydrochloric and phosphorous acids are produced; in the presence of metal, hydrogen may also be liberated. If a fire occurs, CO_2 extinguishers are recommended.

2. Employee Accident (Serious)

a. Telephone Wilmington Fire Department for an ambulance and supply them with as much information as they need in regard to incident, degree of severity, etc. Telephone number is 658-3200.

b. Designate one (1) employee to go to the truck gate to await the arrival of the ambulance and guide it to the proper area.

c. Apply whatever first aid measures are appropriate under the existing circumstances.

d. NOTIFY:
1. Area Supervisor
2. Production Superintendent
3. Plant Manager
4. Safety Supervisor
5. Loss Prevention Supervisor

3. Employee Illness (Serious)

See Item 2 - Employee Accident

4. General Fire

This item applies to problems such as fire involving buildings, vehicles, woods, or grass or of a general nature. The concept of combating a general fire would be to notify the Wilmington Fire Department and then attempt to contain it while waiting for them.

Note: IF THERE IS A QUESTION IN YOUR MIND WHETHER TO NOTIFY THE FIRE DEPARTMENT BY ALARM OR TELEPHONE USE THE ALARM - TIME CAN BE A CRITICAL FACTOR.

When the Fire Department arrives for any emergency, the officer-in-charge assumes total charge of the emergency operation. However, he will need and must rely upon information from the Production Supervisors on the problem, the current status and information on the nature of the materials involved.

5. Boiler Explosion (or Fire)

a. Shut off all electrical power to equipment; if possible, leave power on for lighting purposes. The flow of fuel (oil or gas) should stop itself using fusible line valves.

b. Notify the Maintenance Supervisor so that necessary repairs can be started as soon as possible.

c. Check all process equipment to ensure that further damage will not be done by process freeze-ups, etc.

D. Chemical Spills or Discharges

Air Release (Ammonia, Hydrogen Chloride, Formaldehyde)
In the event of a situation where a gaseous material is released or gases are being evolved from a liquid spill, the following steps should be taken:

a. After the immediate area has been evacuated and all personnel accounted for, the Production Supervisor should notify the Wilmington Fire Department either by telephone or by the alarm box. He should describe the type and extent of the discharge.

b. The Production Supervisor should be in a position to recommend further evacuation to the Fire Department based upon his knowledge of the material involved in the release and the general weather conditions.

c. If further internal action is to be taken, the Production Supervisor should select two (2) volunteers, preferably one (1) production operator familiar with the process and one (1) maintenance mechanic. These two people will be equipped with a self-contained breathing unit (Scot-Pak) and the impervious rubber suit if applicable.

Once properly equipped for the emergency, these two (2) people will move into the affected area to search for any personnel that my be trapped or to perform the necessary repair work.

2. Liquid Spills

Those liquids which may present the greatest problem if spilled are sulfuric acid, muriatic acid and phosphorous trichloride. For corrective measures see IVB1, IVB2 and IVC1 respectively.

In the event of a spill involving a liquid with specified reportable quantities (see Appendix "B"), the Production Supervisor should notify the Plant Manager he will then notify the National Response Center. If the Plant Manager is not available contact in order, the following:

a. Plant Manager's delegate
b. Production Superintendent
c. Area Supervisor

In the event that a liquid is spilled, it should be prevented from reaching storm sewers or surface drainage ditches and stream. If the spill reaches surface waters, the spill should be contained using the absorbent booms stored at the waste treatment plant.

3. Hazardous Waste Spill

There are no hazardous wastes stored on site that if spilled, will create a significant emergency situation. However, any spill involving these waste materials must be immediately contained, collected with absorbent type materials, drummed and stored in the appropriate containment area. (See Waste Management Plan).

V Communications

A. Within Manufacturing Group

In the event of an emergency, immediately notify the following personnel:
a) Plant Manager
b) Production Superintendent
c) Area Supervisor
d) Production Control Supervisor
e) Maintenance Supervisor
f) Safety Supervisor
g) Loss Prevention Supervisor

If the emergency is such that assistance is required, notify all production Supervisors. Telephone numbers are listed in Section VI.

B. To Stamford

If the emergency is extremely serious, the Plant Manager, Production Superintendent or the area Supervisor will notify the Director of Manufacturing or, if unavailable, a member of his staff. This notification should be done immediately regardless of the hour.

Director of Manufacturing - R. Bradford	W-203-356-2832 H-203-356-2251 or 203-226-5948
Enviromental Affairs - D. Vaughn	W-615-336-2251 H-615-336-5387
Safety - F. Scherber	W-203-356-2513 W-203-789-5358 H-203-421-4504

OR

G. Schade	W-203-356-3204 H-203-748-3041

C. To News Media

The personnel responsible for issuing official information to the news media in the event of an emergency or major problem are the Plant Manager or person holding his grant. If a representative of the news media calls or contacts any member of the Manufacturing Group other than the two named above, minimal information should be given.

The following information can be supplied by a Production Supervisor to a telephone call concerning an emergency - as an example, assume there had been a fire in one of the product warehouses

	General	Specific
1.	Name (Supervisor)	John Smith, Shift Supervisor
2.	Nature of Problem	Fire in warehouse containing product
3.	Extent of Problem	A minor fire; no personnel injured
4.	Current Status	Situation under control with Fire Dept. standing by
5.	Additional Information	If you would contact us in a short time, the Plant Manager will provide detailed information on the problem.

D. To Suppliers

If the emergency involves the slow release of a raw material and specialized technical assistance is required, call the supplier (telephone numbers are listed in Section VII) and tell them of the problem. They will supply either technical advise or assistance in the form of trained emergency repairmen.

VI. Emergency Telephone Numbers

Wilmington Police Dept.	658-3331
Wilmington Fire Dept.	658-3200
Wilmington - Ambulance	658-3200
Industrial Medical Center	438-9600
New England Memorial Hospital	665-1740
Choate Hospital, Woburn	933-6700
Winchester Hospital	719-9000

R. J. McBrien	- Plant Manager	233-7198
M. D. Townley	- Production Superintendent	935-8391
P. J. Kane	- Area Supervisor	667-2408
J. A. Dreyfuss	- Maintenance Engineer	663-4007
D. F. Court	- Production Control Supervisor	851-5422
M. Ahsan	- Enviromental Engineer	663-4616
W. G. Landry	- Loss Prevention Supervisor	452-9203
D. J. Gardner	- Safety Supervisor	263-8544
G. P. McGrade	- Production Supervisor	453-2948
P. T. Swan	- Production Supervisor	657-7423
D. A. Baird	- Production Supervisor	851-4177
D. W. Cameron	- Maintenance Supervisor	957-1752

CHEMTREC 800-424-9300

For general emergency information on all hazardous spills or incidents - 24 hours a day

National Response Center ..... Reportable Spill Quantities (See Appendix B)

Report to National Response Center (1-800-424-8802)

Required Information:
1. Name and telephone number of reporter
2. Name and address of facility
3. Time and type of incident
4. Name and quantity of materials involved to the extent known
5. Extent of injuries
6. Possible hazards to human health or the environment outside the facility

0041-0232

VII. Emergency Telephone Numbers

A. Suppliers

	Product	Supplier	Contact
1.	Muriatic Acid	Monsanto Everett, MA	Emergency - 1-800-424-9300 (Chemtrec) Inquiries - (617) 387-5010
2.	Sulfuric Acid	Monsanto Everett, MA	See Above
3.	Phosphorous Trichloride	Monsanto St. Louis, MO	Emergency - 1-800-424-9300 (Chemtrec) Inquiries - 1-800-325-3850 (Stan Brand)
4.	Ammonia, Aqua	Axton Cross Holliston, MA	1-800-982-4741 (x-33 Al Nelson) " " " (x-49 Jim Burnes) 617-528-0615 (Al Nelson - home) 617-529-3257 (Jim Burnes - home)
5.	Hydrazine	Olin Stamford, CT	203-789-6083 (8:30-4:30 Doug Simpson) 203-356-2345 (after 4:30 PM)
6.	Sodium Chlorate	P.P.G. Pittsburg, PA	617-666-3900 (Somerville - Scott Hudnall) 412-487-6509 (Main Office - Diane Meyers)
7.	Formaldehyde	Tenneco Piscataway, N.J.	Emergency - 1-800-424-9300 (Chemtrec) Inquiries - 1-800-631-5274 (Wm. Wermuth)
8.	Sodium Nitrite	Allied Chemical Morristown, N.J.	1-800-631-8050 (Carol O'Connor)

B. Transportation

For emergency information regarding traffic accident involving hazardous materials, call 1-800-424-9300 - CHEMTREC.

1.	Boston & Main R/R	Chief Dispatcher	(617) 667-2800
		Main Office	(617) 273-1166
		Mobile Agent	(617) 663-9330
2.	Ritter Trucking	Local Terminal	(617) 933-3600
		Main Terminal	(201) 381-7200
3.	Roy Bros.		(617) 272-6617
			(617) 667-1921
4.	Matlack		1-800-243-0466
5.	Chemical Leaman		1-800-631-2884

VIII Evacuation of Office Building

If the emergency is such that it may affect the personnel in the office building and laboratories, these personnel should be evacuated to a safe area. A member of Plant supervision will notify the switchboard of the nature and extent of the problem; the switchboard should immediately notify one of the following for evacuation instructions:

J. Plumer
W. Landry
S. Zuccaro

If the switchboard is unable to contact any of the above and the emergency poses an obvious and immediate threat to the office personnel, then the switchboard should assume control and make the necessary internal calls to evacuate the building.

Four areas are designated for assembly of personnel:

1. Front parking lot
2. Area across Eames Street (Dragon Cement)
3. Corner of Eames Street and Route 38
4. Corner of Eames Street and Woburn Street

Choice of an assembly will depend upon wind conditions and extent of the emergency.

SEE APPENDIX "C" FOR EVACUATION ROUTES.

IX Emergency Equipment

Plant emergency equipment consists of:

1. Self contained breathing units (4)
2. Canister Masks for gases
3. Fire Extinguishers
4. Fire hoses/hydrant/sprinklers
5. Impervious rubber acid suits (2)

See Appexdix "A"

Additional information on the above is contained in the Wilmington Plant Safety Plan.

X Summary

In the event of an emergency:

1. Notify the Wilmington Fire Department

2. Account for all personnel

3. Take immediate measures to contain the problem

4. You, the Production Supervisor, are responsible for coordinating and directing the actions to relieve the emergency.

5. When the Fire Depatment arrives, the officer-in-charge becomes the director of emergency measures but he will rely heavily on you for information.

6. Sprinkler operations and emergency procedures, as directed by the Fire Department, should be followed exactly.

7. Notify the appropriate people as listed in this plan.

8. The general plant alarms mentioned on Page 2, Section III, Subpart C, will be tested each Friday at 12:00 NOON by the security officer.

Addressees:

R. McBrien
M. Townley
W. Landry
D. Court
M. Ahsan
J. Dreyfuss
P. Kane
P. Swan
G. McGrade
D. Cameron
D. Baird
D. Gardner
D. Phelps
S. Fox
H. Bunch

J. Rose
V. Corso
G. Schade (Stamford, CT)
J. Plumer
R. Guiliani
D. Vaughn (Charleston, TN)
Wilmington Fire Department
Wilmington Police Department
Industrial Medical Center (Stoneham, MA)
New England Memorial Hospital (Stoneham, MA)
Wilmington Guard House

Ronald J. McBrien

Ronald J. McBrien
Plant Manager

APPENDIx A

LOCATION OF FIRE EXTINGUISHERS

DATE:

NO.	SIZE	TYPE	CLASS	LOCATION
1	20 lb	CO2	BC	Plant A - N. Wall - Near Fire hose reel - Level 1
2	20 lb	CO2	BC	Plant A -W.Wall next to grinding room - Level 1
3	20 lb	CO2	BC	Plant A - - At top of the stairs - Level 2
4	20 lb	CO2	BC	Plant A - W Wall - Near ice room door - Level 2
5	20 lb	CO2	BC	Plant B - N Wall - Drum cleaning room - Level 1
6	20 lb	CO2	BC	Plant B - W. Wall - At personnel door - Level 1
7	20 lb	CO2	BC	Plant B - E Wall - at exit/personnel door-Level 1
8	20 lb	CO2	BC	Plant B - N. Wall near door on bridge - Level 2
9	20 lb	CO2	BC	Plant C-1 - E wall near overhead door - Level 1
10	20 lb	DRY	ABC	Plant C-1 - S. Wall - for PCl3 (near dryer room) Level 1
11	20 lb	CO2	BC	Plant C-1 - Column near E reactor - Level 1
12	20 lb	CO2	BC	Plant C-1-N Wall-between Maint.-Level 1& Switch room doors
13	20 lb	CO2	BC	Plant C-1 N. Wall - Maintenance Shop - Level 1
14	20 lb	CO2	BC	Plant C-1- Bridge Operators desk - Level 2
15	20 lb	CO2	BC	Plant C-1 -Filter drum area - Level 2 Area
16	20 lb	CO2	BC	Plant C-2 - N. Wall - Operators desk area - Level 1
17	20 lb	CO2	BC	Plant C-2 - N. Wall - On Column Level 2
18	20 lb	CO2	BC	Plant C-3 - W. Wall Level 1
19	20 lb	CO2	BC	Plant C-3 - Bridge Operators desk - Level 2
20	20 lb	CO2	BC	Maintenance - N. Wall - At personnel door - Level 1
[illegible]	10 lb	DRY	ABC	Maintenance - S. Wall - Beneath gas mask - Level 1
[illegible]	10 lb	DRY	ABC	Maintenance - W. Wall -Outside break room - Level 1
23	20 lb	CO2	BC	Boiler Room - W. Wall - Boiler #3 at door - Level 1
24	20 lb	CO2	BC	Boiler Room - W. Wall - Boiler #2 - Level 1
25	20 lb	CO2	BC	Boiler Room - 200H.P. Boiler #1-Level 1
26	20 lb	CO2	BC	Boiler Room - W. Wall - 400 H.P. Boiler #1 - Level 1
27	20 lb	CO2	BC	Plant D-2 - W. Wall - At personnel door - Level 1
28	20 lb	CO2	BC	Plant D-2 - -At top of stair - Level 2
29	20 lb	CO2	BC	Plant D-2 - W. Wall - Compressor room - Level 1
30	20 lb	CO2	BC	Plant D-3 - S. Wall - At personnel door - Level 1
31	20 lb	CO2	BC	Waste Treatment - NE corner - Shop area - Level 1
32	20 lb	DRY	ABC	Waste Treatment - N. Wall - Near Storage area - Level 1
33	17 lb	HALON	ABC	Waste Treatment - At top of stairs to bridge - Level 2
34	2.5 lb	DRY	ABC	Waste Treatment - E. Wall - Office Area - Level 2
35	20 lb	DRY	ABC	Waste Treatment - Outside-At bridge to tanks - level 2
36	20 lb	DRY	ABC	#5Warehouse - N. Wall at overhead door - Level 1
37	20 lb	DRY	ABC	#5Warehouse - S. Wall-Near back overhead - Level 1
38	20 lb	DRY	ABC	#5Warehouse - N. Wall - On column Level 1
39	20 lb	DRY	ABC	#5Warehouse -S. Wall-Near Steam condensate line-Level 1
40	20 lb	CO2	BC	#4Warehouse-N.Wall-Outside Flammable Storage Door-Level 1
41	20 lb	DRY	ABC	#4Warehouse-E.Wall - Near weigh scale - Level 1
42	20 lb	DRY	ABC	#4Warehouse-E.Wall-Midway column - level 1
43	20 lb	DRY	ABC	#4Warehouse-S.Wall-Between grinding rooms - Level 1
44	20 lb	CO2	BC	#4Warehouse-S.Wall-Grinding room #1-Level 1
45	20 lb	CO2	BC	#4Warehouse-W.Wall-Grinding Room #2 -Level 1
46	20 lb	DRY	ABC	#3Warehouse-E. Wall-Near overhead door - Level 1
47	20 lb	DRY	ABC	#2Warehouse-W. Wall - Near overhead door - Level 1

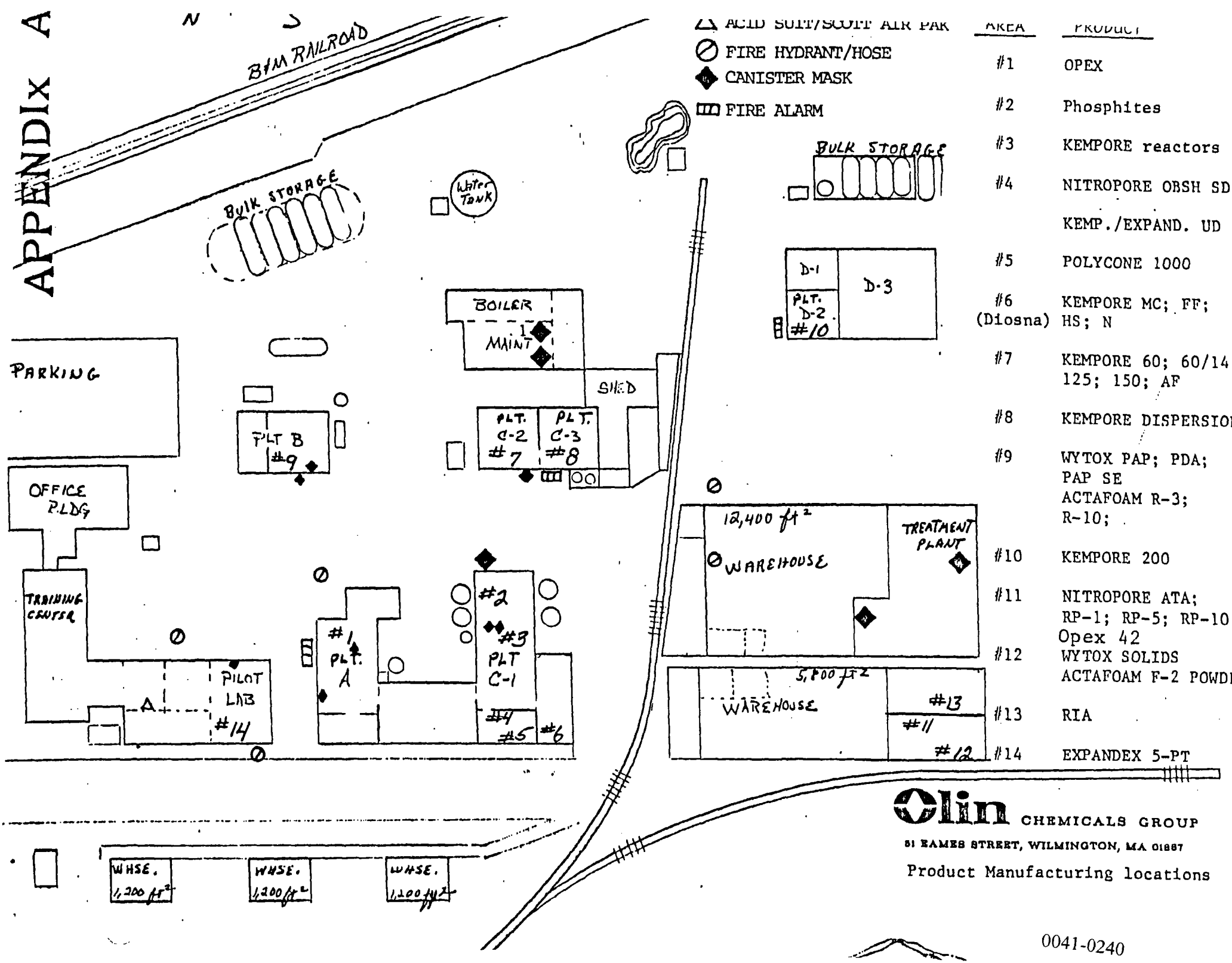
APPENDIX A

LOCATION OF FIRE EXTINGUISHERS

DATE:

R	SIZE	TYPE	CLASS	LOCATION	
	20 lb	DRY	ABC	#1Warehouse-E Wall Near overhead door -Level #1	
	5 lb	DRY	ABC	Security Office - S. Wall - At personnel door - Level 1	
	2.5gal	AFFF	AB	Pilot Plant - E. Wall - Near personnel door - Level 1	
	20 lb	CO2	BC	Pilot Plant - W. Wall-Tandem near personnel door Level 1	
	2.5gal	AFFF	AB	Pilot Plant-W. wall -Near overhead door	
	20 lb	CO2	BC	Pilot Plant-W. wall-Tandem near overhead door-Level 1	
	20 lb	AFFF	BC	C-1 Shed S. Wall - Beside heat exchanger - Level 1	
	20 lb	CO2	BC	Diosna Area - Wall - At southeast corner - Level 1	
	10 lb	DRY	ABC	Cafeteria Lobby-S. Wall beneath bulletin board - Level 1	
	15 lb	CO2	BC	Quality Control Lab-E. Wall-Near renthood - Level 2	
	15 lb	CO2	BC	Quality Control Lab - Outside Office on wall - Level 2	
	15 lb	CO2	BC	Pilot Plant Lab - E.Wall - Near door - Level 2	
	15 lb	CO2	BC	Pilot Plant lab - W. Wall - underneath window - Level 2	
	10 lb	DRY	ABC	Q.C./P.P. Hallway-W.Wall - Back hallway - Level 2	
	5 lb	CO2	BC	Electrical Shop - E. Wall - near door	
	10 lb	CO2	BC	Sample Room - N. Wall - at entrance door - level 1	
	10 lb	CO2	BC	Sample Room - W. Wall-in back room	
	10 lb	DRY	ABC	Safety Training Center - W. Wall-at Blackboard-Level 1	
	10 lb	DRY	ABC	Safety Training Center - W. Wall-outside AV room-level 1	
	10 lb	DRY	ABC	Office Building-E Wall Process Tech. wing - level 1	
	10 lb	DRY	ABC	Office Building -S. Wall - Engineering Hallway-Level 1	
	10 lb	DRY	ABC	Office Building - E. Wall-Sign machine room - Level 1	
	5 lb	HALON	BC	Office Building - W. Wall -Telephone room - Level B	
	5 lb	HALON	BC	Office Building - E. Wall Electrical panel room-Level B	
	20 lb	DRY	ABC	Office Building-W.Wall-Hallway outside heating rm.-Level B	
	10 lb	DRY	ABC	Office Building-S.Wall-Outside Employee Lounge-Level B	
	20 lb	DRY	ABC	Office Building-S.Wall - inside heating room - Level B	
	10 lb	DRY	ABC	Office Building- -in open hall area - Level 2	
	5 lb	HALON	BC	Office Building - E. Wall-Computer Room - Level 2	
	2.5 lb	HALON	BC	Office Building-W. Wall - Coffee Room - Level2	
	10 lb	DRY	ABC	Electrical Storage Room-N. Wall -Level 2	
	20 lb	DRY	ABC	Emergency Generator Building - S. Wall -Level 1	
	15 lb	CO2	BC	Quality Control Lab-S.Wall-Outside Storage Room-Level 2	
	15 lb	CO2	BC	Pilot Plant - -Bridge area near telephone-Level 2	
	5 lb	DRY	ABC	Warehouse Forktruck	
	5 lb	DRY	ABC	Warehouse Forktruck	
	5 lb	DRY	ABC	Maintenance Forktruck	
	5 lb	DRY	ABC	Maintenance Forktruck	
	5 lb	HALON	BC	Electrical Generator Room	
	5 lb	HALON	BC	Fire Pump House	
	20 lb.	DRY	ABC	HazardousStorage Area (East End of Plant D3)	
				(4) 5lb. Dry Chemical Spares	
				(3) 10lb. Dry Chemical Spares	

APPENDIX A



AREA	PRODUCT
#1	OPEX
#2	Phosphites
#3	KEMPORE reactors
#4	NITROPORE OBSH SD
	KEMP./EXPAND. UD
#5	POLYCONE 1000
#6 (Diosna)	KEMPORE MC; FF; HS; N
#7	KEMPORE 60; 60/14; 125; 150; AF
#8	KEMPORE DISPERSION
#9	WYTOX PAP; PDA; PAP SE ACTAFOAM R-3; R-10;
#10	KEMPORE 200
#11	NITROPORE ATA; RP-1; RP-5; RP-10 Opex 42
#12	WYTOX SOLIDS ACTAFOAM F-2 POWDE
#13	RIA
#14	EXPANDEX 5-PT

Olin CHEMICALS GROUP

51 EAMES STREET, WILMINGTON, MA 01887

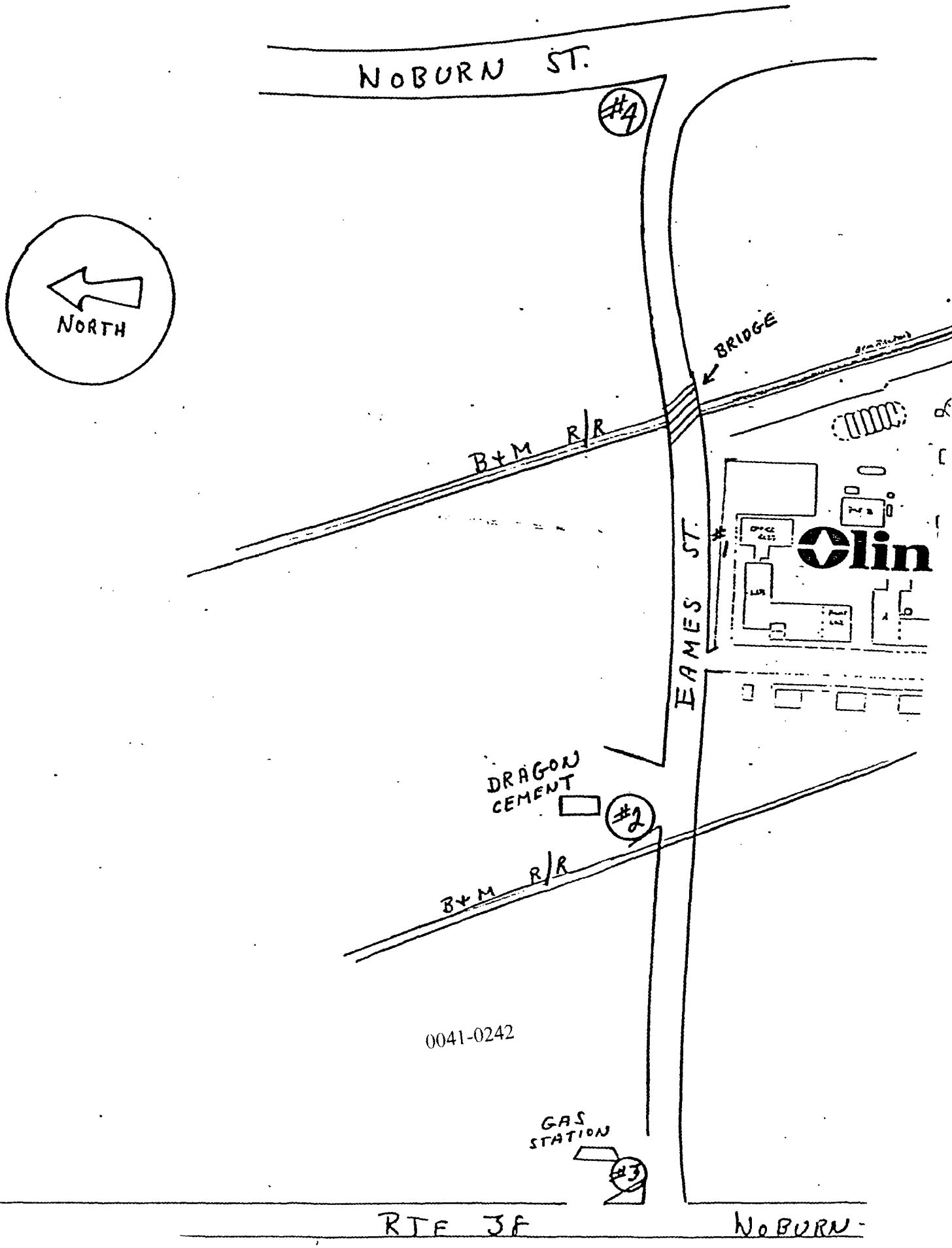
Product Manufacturing locations

0041-0240

WILMINGTON HAZARDOUS SUBSTANCES SUBJECT TO SUPERFUND

SUBSTANCE	REPORTABLE QUANTITY (POUNDS)
ACETONE	1
DI-OCTYL PHTHALATE	1
HYDRAZINE	1
PHTHALIC ANHYDRIDE	1
SODIUM AZIDE	1
AMMONIA	100
SODIUM NITRITE	100
BENZONITRILE	1000
FORMALDEHYDE	1000
PARAFORMALDEHYDE	1000
PHENOL	1000
SODIUM & AMMONIUM HYDROXIDE	1000
SULFURIC ACID	1000
AMMONIUM CHLORIDE	5000
HYDROCHLORIC ACID	5000
PHOSPHORUS TRICHLORIDE	5000

APPENDIX



0041-0242

EXHIBIT G

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

WILMINGTON PLANT

ENVIRONMENTAL AND OPERATIONS

Subject: Waste Disposal Plan and Procedure	Procedure No._____
	Effective Date:_____
Prepared by: M.Ahsan Approved by: D.Vaughn	Review Date: 5/6/81
	Page 1 of 18

I POLICY

It is the policy of the Wilmington Plant that all waste materials will be handled, stored and disposed of with prudent regard for safety and the environment in such a manner as will comply with referenced Federal and State Law.

II PURPOSE

The purpose of this plan and procedure is to establish responsibilities, procedures and methods and to minimize the generation of waste materials through the encouragement of reuse, recycling and good housekeeping for the prompt handling and disposal of waste materials in conformance with the above policy.

III BACKGOUND

Many waste materials are generated by the operation of chemical process units, such as: a routine by-product of the process; during process upsets; during start-ups and shutdowns; and by maintenance, engineering, laboratory and construction activities. The USEPA and the Massachusetts Department of Environmental Quality and Engineering have developed (and are continuing to develop) comprehensive and broadly applicable regulations covering the management, handling and disposal of waste materials, particularly those that may pose a threat to human health or the environment. Specific procedures and methods

are required to assure proper handling and disposal of all waste material.

IV STATUATORY OBLIGATIONS

This Plant procedure addresses (but is not limited to) the provisions of and the Regulations based on the following:

A. RCRA - Resource Conservation and Recovery Act

B. Massachusetts Solid Waste Disposal Act

C. Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)

D. Massachusetts Hazardous Waste Act

V DEFINITIONS

A. DOT - Department of Transportation

B. USEPA - United States Environmental Protection Agency

C. DEQE - Department of Environmental Quality Engineering

D. SPCC Plan - Spill Prevention, Control and Counter measure. Plan prepared for the control and prevention of spills and discharge of oil to surface water.

E. PCB's - Polychlorinated Biphenyls (heat transfer fluids in transformers, and capacitors, etc.).

F. Waste Material - Any material which is removed from the area of operation for the purpose of disposal other than those materials that routinely flow to a permitted treatment system or exit via a permitted stacked (vent). Waste materials include but are not limited to chemical wastes, waste oil, used containers, scrap metal, lumber, debris, trash and spill cleanup materials.

G. In Plant Generator - (Olin) Shift Supervisor of the Production, Maintenance, or other department (or his designee) generating a specific waste.

H. Olin Control Number - The identification number assigned by the Plant Environmental Engineer to an approved "Characterization of Waste," CSD-WOI form. This form is required to be completed prior to disposal for all wastes, except uncontaminated trash and construction debris.

I. Hazardous Waste - A material that is defined by the USEPA under RCRA as ignitable, corrosive, reactive, toxic, or which is specifically listed in Federal Register, subpart C, section 261-20 to 261-24.

J. Non-Hazardous Waste - Material not meeting the criteria for hazardous waste.

K. Acute Hazardous Waste - A commercial product designated under the RCRA "P-list" (40 CFR part 261.33 (e)) and for which is required special consideration for the disposal of off-spec or waste commercial products, as well as the empty containers having contained the specified product, and any spill clean-up of the material.

L. New Waste - Any waste stream NOT currently described on an approved CSD-WOI Waste Characterization form.

M. Old Waste - Any waste stream which has been described on an CSD-WOI Waste Characterization form and which has been approved by the Environmental Affairs Department for Disposal.

N. Refuse - Putrescible or non-putrescible solid waste materials, consisting of combustible and non-combustible solid waste including paper, rags, boxes, wood, plastics, grass, glass, cans, pipes and tubings.

O. Construction Debris - Non-Putrescible, non-combustible, inert solid waste materials, including rocks, bricks, blocks, concrete and uncontaminated dirt.

WASTE DISPOSAL PLAN AND PROCEDURE

VI RESPONSIBILITIES

A. All employees are responsible for discarding waste in the manner prescribed for each type of waste according to this plan (i.e. only refuse and dumpsters).

B. Plant Supervisors are responsible for assuring proper segregation handling, and disposal for those wastes generated in their Area according to the Policy and Precedures of this Plan.

C. Plant Purchasing Agent is responsible for logging requisitions, issuing release orders against existing contracts and distributing purchasing documents.

D. Shipping Supervisor is responsible for assuring all vehicles transporting hazardous materials from the Plant are properly identified, equipped, placarded and loaded according to DOT Regulations; and that the transporter signs a hazardous waste manifest for each shipment.

E. Maintenance Department is responsible for assuring that the hazardous waste storage areas are properly maintained according to the guidance provided by the Plant Environmental Engineer and for the proper placement of drums of hazardous waste in the hazardous waste stroage areas as instructed by the Plant Environmental Engineer.

F. Plant Environmental Engineer is responsible for the overall management of hazardous waste storage and disposal for the Plant; including the approval of waste materials to be placed in storage, the inspection of storage facilities, the maintenance of storage logs, the issuing of hazardous manifest numbers, the preparation and tracking of all hazardous waste manifests, the preparation of all reports required under the waste management program, and providing guidance to the maintenance department in terms of maintaining the storage areas and placement of waste in the storage areas.

G. Production Supervisor is responsible for assuring that this Plan is followed by all production and staff personnel.

VII PROCEDURE

A. Product or other chemicals will not be deposited in dumpster containers or trash cans. All product will either be recycled back to the process or disposed of according to this procedure. No empty containers will be deposited in the dumpster or other trash recepticle unless it has been specifically approved by the Environmental Engineer.

B. All refuse shall be deposited in the dumpster containers located in the Plant. In Plant Generators will coordinate disposal of refuse which does not fit completely in the dumpster containers through the Plant Environmental Engineer.

C. Construction debris, should not be deposited in the dumpster containers but should be disposed under the direction of the Environmental Engineer.

D. All spill clean-up materials must be put into steel drums and handled according to the procedures outlined under Section VII. F.

E. In no case should waste materials be dumped or discharged to the process sewer or the storm sewer unless specially designated and permitted.

F. The In Plant Generator of waste material will: (1) maintain each different type of waste separately in appropriate DOT containers, (2) sample the material, (3) attempt to reclaim and reuse as much waste material as possible (4) prepare the waste for storage. Liquid waste should be stored in separate containers free of rags, sand and other solid materials. All bungs and lids must be securely in place, (5) label the drums as to the date, weight, and waste material contained in the drum and the generating department, (6) submit a waste profile sheet to the Environmental Engineer indicating the generating department, the type of waste, known chemical constituents in the waste, the number and weight of drums along with a sample of the waste.

G. The Environmental Engineer will coordinate storage of any material determined to be hazardous in the hazardous waste storage area. Other wastes will be stored in the non-hazardous storage area. In the case of "new waste", he may, at his discretion, place material in those storage areas before they are determined to be hazardous by the outside laboratory. The Environmental Engineer will assign an I.D. number to every drum and will maintain a log showing hazardous characteristics, quantity, date entered into storage, date removed, and the I.D. number. He will also label the material with proper DOT and hazardous waste labels.

H. The Environmental Engineer will determine whether the waste is a "new waste" or an "old waste". If it is a "new waste" he will: (1) have generator obtain a sample, (2) arrange for analysis of hazardous properties and chemical characteristics through an outside laboratory as outlined under the Hazardous Waste Analysis Plan, (3) prepare a CSD-WOI form, assign an Olin control number for this specific waste and have the information on the form verified and signed by the Production supervisor or the plant manager (4) he will prepare a requisition to cover the cost of the disposal services including the estimated quantity, waste titles, and charge codes. The production supervisor or the plant manager will approve the requisition and forward the requisition along with a copy of the CSD-WOI form to the plant purchasing agent. Plant purchasing receives and logs those approved documents and forwards copies of the CSD-WOI forms and the original approved requisition to CSD. (6) submit the CSD-WOI form to EAD for approval of the disposal method. EAD will forward the means of disposal and will send a copy of the amended contract and the CSD-WOI form approved by EAD to the ~~Plant Purchasing~~ Agent with a copy to the Plant Environmental Engineer.

I. Contract Service Department will do the following:

1. Prepare contract and contact the appropriate disposers to submit proposals.
2. Determine if samples of the wastes are required by the disposers. (If it is determined that samples are required, the contract service department will contact the plant environmental engineer directly with sampling instructions).
3. Receive, evaluate and award the business in accordance with Corporate and Group policies.
4. Establish a signed contractual agreement for disposal of the waste.
5. Forward the specific Plant contract or contract amendment to Plant Purchasing, along with the applicable instructions for shipping.

J. As soon as the Environmental Engineer has determined the waste to be "old waste" or as soon as he has received and amended contract and EAD approved CSD-WOI on a "new waste" he will review the contract Exhibits versus the CSD-WOI forms noting code numbers and waste descriptions. He will prepare Release Order (OM216A) and a manifest. He will note the Contract Number, Product Code Number, quantity and charge number on the manifest in addition to other required information. He will forward the manifest to the Plant Manager for approval and the Release Order to Plant Purchasing.

K. Plant Purchasing Agent retains the executed contract and distributes a copy of contract exhibits to Environmental Engineer. The Plant Purchasing Agent will write a release order against the blanket order contract for disposal, making necessary arrangemants with the contractor. He will then forward a copy of the release order to the Contractor, Environmental Engineer, CSD, and the Shipping Supervisor including date and other pertinent arrangements.

L. The Environmental Engineer in preparing the manifest in accordance with RCRA Regulations will:

1. Obtain the Plant Manager's approval of the manifest.
2. Obtain the transporter's handwritten signature and the date of acceptance.
3. Retain one copy of the manifest for his files, send one copy to DEQE and send the remaining copies with the transporter.

M. The Shipping Supervisor will assure the truck is placarded to DOT Regulations and that the transporter has signed the manifest.

N. If the owner or operator of the designated disposal facility (contractor) does not return a signed copy of the manifest within 35 days, the Environmental Engineer must contact the transporter and/or the contractor to determine the status of the waste shipment.

O. If the contractor has not returned a signed copy of the manifest within 45 days, the Environmental Engineer will submit an exception report to the Massachusetts DEQE.

P. The returned manifest, if received by the Purchasing Agent or Accounting Department, should be forwarded directly to the Environmental Engineer. The Environmental Engineer will fill out a receiving report on the release order when he receives the returned, signed manifest. Accounting will not pay any invoice against that release order until they have a receiving report.

Q. The Environmental Engineer will send a copy of the returned handwritten, signed manifest to DEQE.

R. The Environmental Engineer will maintain the files of returned manifests for a period of three years from the date the transporter accepts the waste.

WILMINGTON

WASTE MATERIAL PROFILE SHEET

1. Waste name:_____ Date:_____

2. Total weight: No. of drums:_____ Lbs._____ Gallons:_____

3. Process Generating Waste:_____

4. Waste Properties:

   a. Physical state at 70°F, solid_____ semisolid_____ liquid_____

   b. Total solids (%):_____

   c. pH_____

   d. Flash point (if known)_____ °F or _____ °C

5. Waste composition:

General constituents:	(%)
_____	_____
_____	_____
_____	_____
_____	_____

6. Comments/Remarks:_____

_____

_____

Generator
(Signature)_____

0041-0252

OLIN CHEMICALS GROUP
CHARACTERIZATION OF WASTE

OLIN CONTROL NUMBER _____

Generating Facility _____ EPA I.D. No. _____ Date _____

Generating Department _____ Quantity (Annual) _____

Description _____

DOT Proper Shipping Name _____

General Constituents:

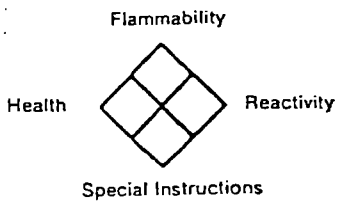
1. _____ (____%-____%)
2. _____ (____%-____%)
3. _____ (____%-____%)
4. _____ (____%-____%)
5. _____ (____%-____%)
6. _____ (____%-____%)
7. _____ (____ - ____)

Physical State @ 25°C _____
Density _____ g/cm^3
Flashpoint _____ °C
Melting Point _____ °C
Boiling Point _____ °C
Heating Value _____ BTU/Lb
pH _____ s.u.

Toxicity Information: _____

Reactivity Data: _____

EPA Waste Codes: _____



Packaging _____

D.O.T. Class: _____

Special Handling Instructions: _____

Submitted by: _____ Verified by: _____
Title _____ Title _____
Location _____ Location _____
Date _____ Date _____

Method of Disposal: _____

EPA Hazardous Waste Criteria: EP Toxic _____ EAD Disposal Approval _____
Corrosive _____ Ignitable _____ Title _____
Reactive _____ Listed Waste _____ Date _____

0041-0253

HAZARSOUS WASTE ANALYSIS PLAN

Section I

At minimum, this analysis must contain all the information which must be known to treat, store or dispose of the waste in accordance with the requirements outlined in the RCRA regulations Part III, subpart B & C.

The parameters for which each hazardous waste will be analysed are:

a. Ignitability (Flash point less than 140°C or 60°F)

b. Corrosivity (ph between 2.0 - 12.5)

c. Reactivity

d. Extraction Procedure Toxicity

The following analysis will be performed and results recorded by Environmental Engineer:

1. Hazardous waste generated on-site must be subjected to analyses at sufficient frequency to verify that storage and disposal procedures continue to be appropriate for those wastes.
2. Analyses must be performed prior to off-site disposal of the new wastes unless a determination can be made as to whether the waste meets the hazardous waste criteria based on the known characteristics of the waste.
3. Environmental Engineer will determine the required analyses of the waste solvent based upon the solvents currently being used at the Plant and records obtained from the generators.
4. Any other waste, that has not previously been tested and determined whether it is or is not a special or hazardous waste, must be analysed for the information requested on CSD-WOI form, including the four parameters identified above.
5. The Environmental Engineer may request analysis periodically to insure that the information provided by generator on any waste is accurate and up to date.

Section I (cont'd)

6. If a waste material is specifically listed under Subpart D Section 261.30-33 of the USEPA Hazardous Waste Regulations, the designated EPA Hazardous Waste number must be noted on the CSD-WOI form and specific testing is not required.

HAZARDOUS WASTE REPRESENTATIVE SAMPLING METHODS

1. The generator or production supervisor will be responsible for sampling hazardous waste.
2. Sampling will be performed according to the appropriate procedures as outlined in the RCRA regulations 40 CFR Part 261, Appendix I and as advised by the Environmental Engineer.
3. The Environmental Engineer will maintain a log of when samples were taken and results, and will maintain a copy of the actual results on file.
4. Specific Sampling Procedures:
   A. Solids or Sludges: Filled drums of solids or sludges will be sampled with a grain thief. The resulting sample will be crushed (if necessary) then thoroughly mixed before a representative portion is secured for later analysis.
   B. Containerized Liquid Wastes: Filled or partially filled drums of waste liquids, will be well mixed and then sampled with a "sampler".

Note: A manual containing information on "Samplers and Sampling Procedures for Hazardous Waste Streams" EPA 600/2-80-018, January 1980 will be maintained by the Environmental Engineer.

WASTE DRUM LABELING

1. Labeling of all drums or containers for disposal will be initiated by the In Plant Generator.
2. Corrosive, flammable liquid and solid, oxidizer labels can be obtained from the Environmental Affairs Department.
3. All containers and drums must have the following information printed on the sides of the generator:

   Waste (name) _____

   Date generated _____

   Quantity _____

   Source or process _____

4. Prior to disposal off-site, the Environmental Engineer will add the following information:

   EPA ID # _____

   Drum # _____

   Manifest# _____

   OLIN CORPORATION - CHEMICALS GROUP
   51 Eames Street
   Wilmington, MA 01887
   (617) 933-4240

5. Hazardous waste drums or containers must have the yellow hazardous waste label. (Environmental Engineer will have a supply of these labels).

DESIGNATED STORAGE AREAS

The following areas are designated waste/hazardous waste storage areas:

MATERIAL	TYPE	LOCATION	APPROXIMATE DIMENTIONS
1. Waste oil, special waste and Hazardous waste	Drums	Plant B	13' x 20'
		Plant D	28' x 48'
2. Waste Ammonia	Bulk	C-3	H = 21'
			D = 11'
3. Muriatic Acid	Bulk	C-1	H = 15'
			D = 11'

INSPECTION PLAN

Hazardous waste storage facilities on the plant site must be inspected regularly and all abnormal observations recorded on the attached form. This inspection must be made and the form completed at least once a week and must include the date and time of inspection, the name of the inspector, a notation of the observation made and the date and nature of any repairs or remedial action. This form will be maintained on file for at least three years from the date of inspection.

In addition, the inspector will call Maintenance Supervisor's attention to any leak, malfunction, damage or other deficiency in the integrity of the facility.

FACILITY	FREQUENCY	DETAILS
A. Waste drum storage (plant B and D)	Daily	Leaks
	"	Damage
	"	Corrosion
	"	Spills
B. Waste Ammonia Storage tank (C-3)	Weekly	Corrosion
	"	Leaks
	"	Damage
C. Muriatic Acid Storage Tank	Weekly	Corrosion
	"	Leaks
	"	Damage
D. Stand-By Bulk Tanks (if used)	Weekly	Corrosion
	"	Leaks
	"	Damage

CLOSURE PLAN

1. Plant B and Plant D Drum Storage Areas.

The waste drum storage facilities (plant B & D storages) will be closed when the wastes are no longer generated or when they are no longer required. It is estimated that these facilities should have a useful life of at least 20 years. At closure all remaining drums of waste will be removed and disposed in a permited Hazardous Waste Treatment or Disposal Facility.

The facilities will be closed by steam-cleaning and/or the structures washing with water or suitable non-hazardous cleaning agent. The resulting clean up residues will be discharged to the plant waste water treatment plant if acceptable. Otherwise the residues will be drummed and disposed in a permitted Hazardous Waste Treatment or Disposal Facility. That cannot be decontaminated, will be removed and disposed in a proper landfill area.

The closure cost estimate at the end of useful life of 20 years, will be $79,000.00.

2. Waste NH_3 and Muriatic Acid Storage Facilities. (tank)

There are three storage facilities, two for waste ammonia (C-3 & T.P.) and one for waste muriatic acid, and the storage capacity ranges from 8,000 to 18,000 gallons of hazardous waste liquid. When the storage facilities are closed, the generated wastes will be neutralized prior to storage and discharged to waste treatment plant or when the wastes are no longer generated. The hazardous waste storage tanks are located in the diked areas and any spilled material will be drained to the waste treatment plant.

At closure, all hazardous wastes and hazardous waste residues will be removed from the tanks and disposed of to the waste water treatment plant. Any related contaminated equipment or confinement structures will be washed with a neutralizing material and then rinsed with water. The resulting liquid will be discharged to the waste water treatment plant. The cleaned tanks will be dismantled, ~~put into steel~~ drum and disposed of in a secure landfill.

The cost estimate for closing this facility after useful life of 20 years, will be $70,000.00.

3. Three 15,000 Gallons Storage Tanks. (Tank Farm B)

There are 3 stand by storage tanks (plant B tank farm) for hazardous waste liquid and this storage facility may not be used. If this facility is used in future, and when the storage facility is closed, the generated wastes will be neutralized prior to storage and discharged to waste treatment plant or when the wastes are no longer generated.

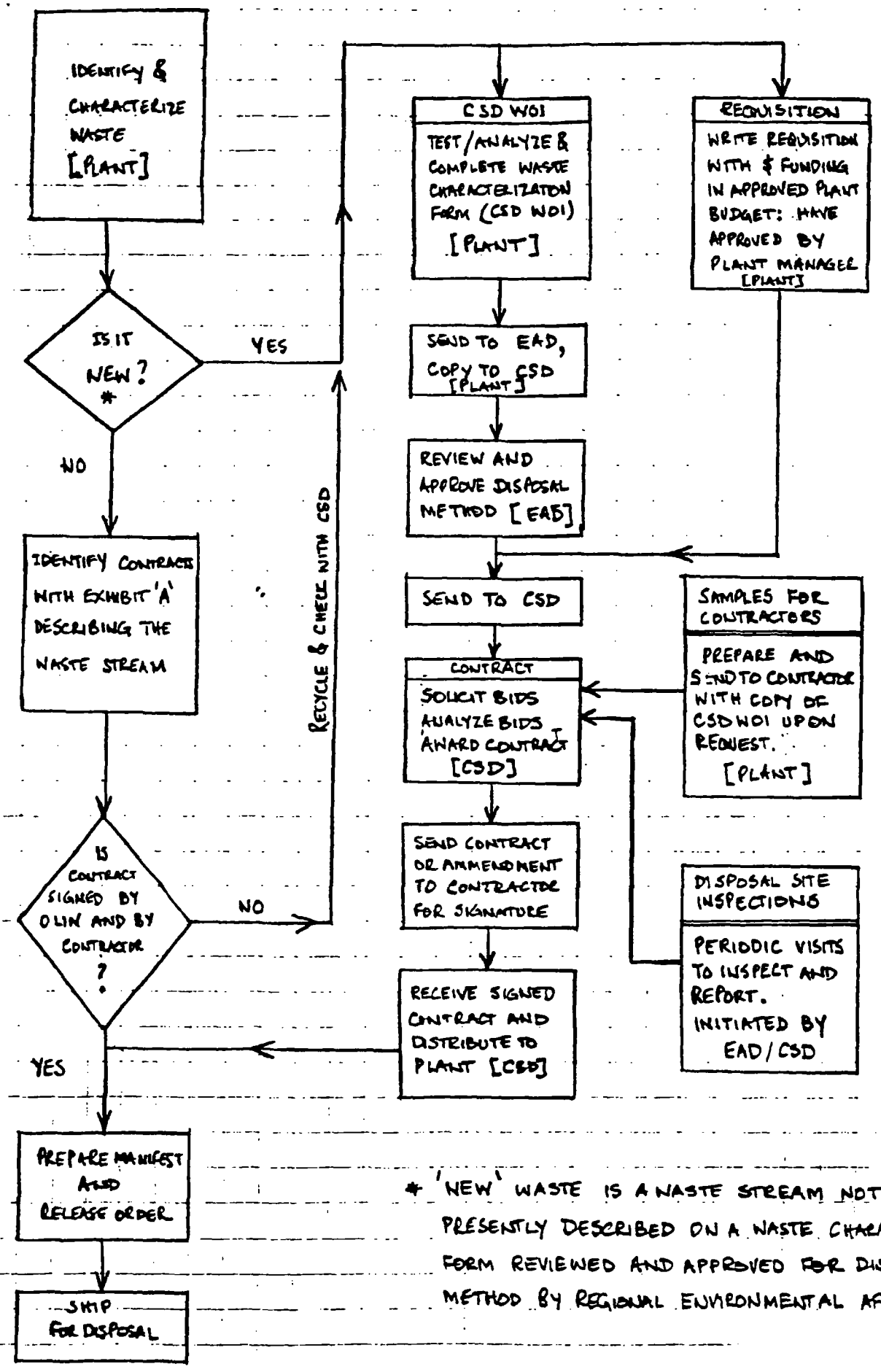
At closure, all hazardous wastes and waste residues will be removed and disposed of to the waste water treatment plant. Any contaminated equipment or confinement structures will be washed and the resulting liquid discharged to the waste treatment plant. The tanks will be dismantled, put into steel drums and disposed of in a safe landfill site.

The closure cost of this storage facility is estimated as $75,000.00 at the end of useful life of 20 years.

FLOW CHART FOR SOLID WASTE DISPOSAL

EXHIBIT A.

12/15/82



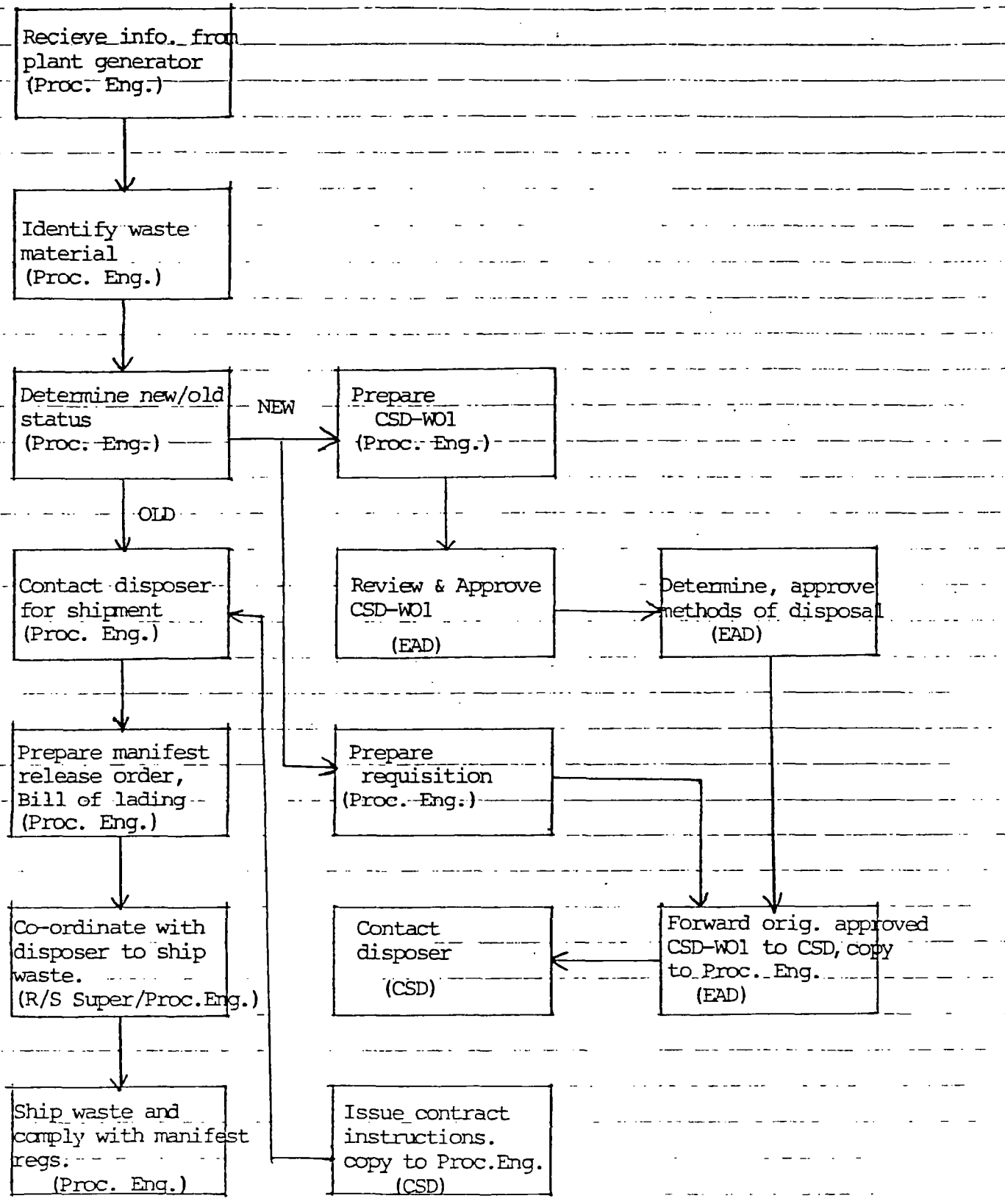
* 'NEW' WASTE IS A WASTE STREAM NOT PRESENTLY DESCRIBED ON A WASTE CHARACTERIZATION FORM REVIEWED AND APPROVED FOR DISPOSAL METHOD BY REGIONAL ENVIRONMENTAL AFFAIRS

CB. 12/15/82.

OLIN WILMINGTON PLANT

WASTE DISPOSAL PLAN

FLOW CHART OF RESPONSIBILITIES



M.R. Ahsan
Sep. 22, 1982

INTER OFFICE MEMO Olin

TO D. Vaughn AT Stamford DATE 3/19/81

FROM M. Ahsan AT Wilmington COPY TO DFC, RMc, MT

SUBJECT HAZARDOUS SUBSTANCES STORAGE FACILITIES

Attached is a copy of plot plan and a list showing the location of each hazardous substance stored at Wilmington Plant site.

OW 220029

0041-0264

WHY FILE THIS COPY? IF YOU MUST RETAIN IT, SPECIFY A DEFINITE RETENTION PERIOD: ONE YEAR _____ OTHER _____

OBJECTIVES:

The objective of this project is to develop a plot plan showing the location of each hazardous substance stored at Wilmington Plant site. This will also include the areas for highest potential for spill and noting the direction of flow of spill if it should occur and what precautionary measures should be taken to deal with any spill involving the methods of prevention.

DESCRIPTION:

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund) requires that releases of hazardous substances be reported to the National Response Center as soon as they are discovered. A list of hazardous substances (material and quantity) subject to Superfund at the Wilmington Plant, is attached to the report for general information.

A copy of this list and plant spill report form will be issued to all the supervisors and other personnels involved.

A plot plan showing the location of each hazardous substance stored is also attached along with a list of hazardous substances being used in production and flow of direction of spill.

A supply of "speedy dry" hazorb. universal absorbent or similar material will be available near every hazardous substance storage location.

RECOMMENDATIONS:

1. Warehouse #4 (main) has three 3" or 4" drains on the floor which they flow outside of the building (west side) - surface drains, not to the waste Treatment Plant. These drains should be either connected to Treatment Plant or completely blocked, because this is a , PCl_3, $NaClO_3$ and benzonitrile storage area.

0041-0265

RECOMMENDATIONS: (cont'd)

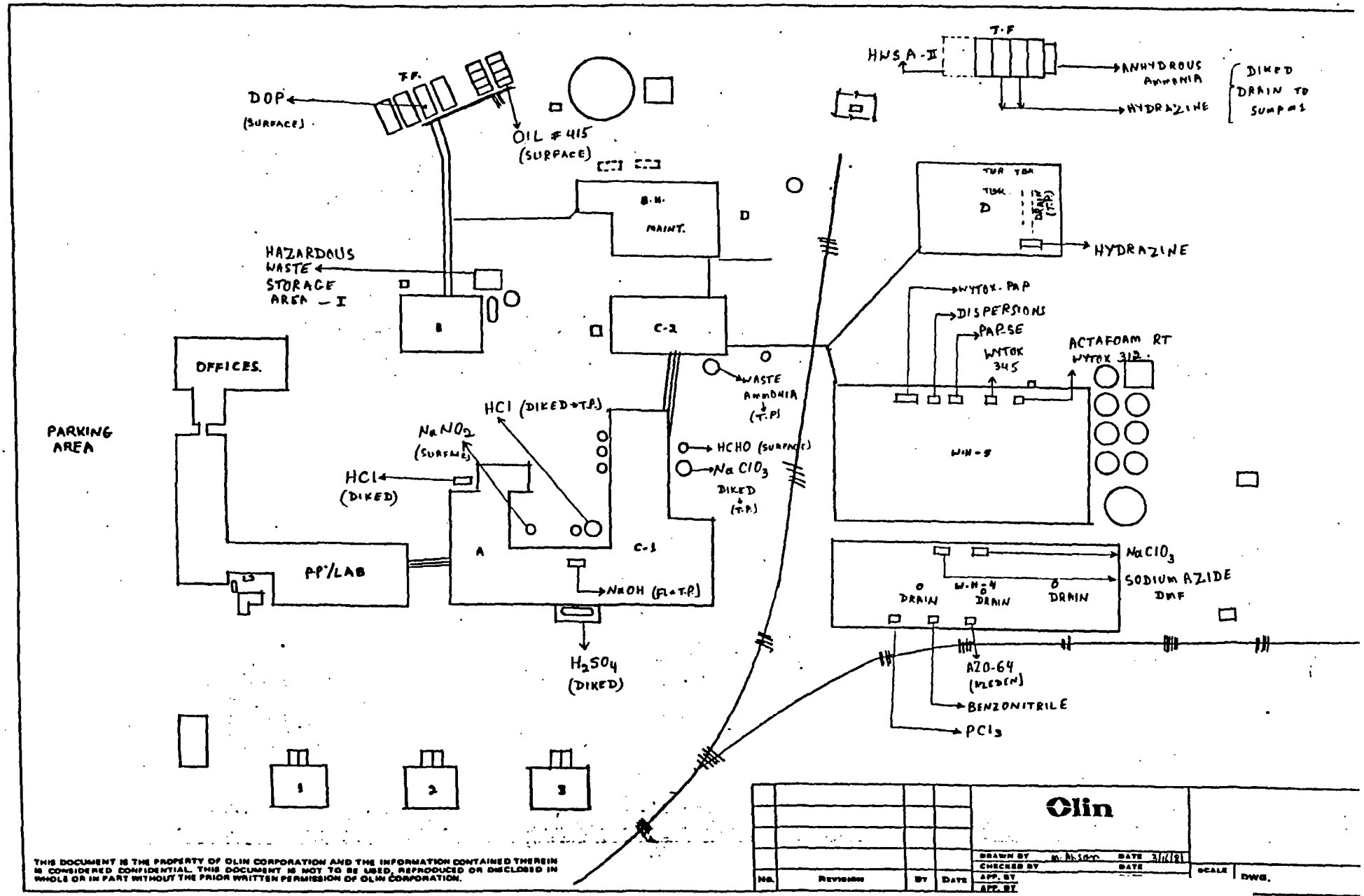
2. Muriactic acid diked storage area, outside plant C-1 needs repair.
3. A spill of $NaNO_2$ will flow into surface drain, so it has to be diked on north side.
4. Hydrazine in Plant D-3, should be moved to curbing or more secure storage area.
5. Plant B tank farm, DOP storage area, should have concrete floor and curbings.
6. The waste ammonia storage tank (sump #1) needs berm, with a drain into sump #1. At present any spill from ammonia tank will be a safety hazard.

bab

MATERIAL	STORAGE	LOCATION	DRAIN	SPILL FLOW DIRECTION	SPILL CLEANUP SUPPLY
Ammonia (NH_4OH)	Tank	Treatment Plant	no drain no curbing	open surface will flow in north-east direction	Water
Ammonia (NH_4OH)	Tank	Plant C-3	T. Plt.	into drain to T.P.	Water (Plant C)
Benzonitrile	Drum	#4 Warehouse	Floor	west side open surface	Hazorb-Universal absorbent (warehouse)
Dioctyl Phthalate (DOP)	Tank	Tank farm Plant B	no drain	into the ground	Hazorb (maintenance)
Hydrazine ($N_2 H_4$)	Drum	Plant D-3	T. Plt and surface	into drain	Hazorb/water
Hydrazine	Tank	Tank farm Plant D	T. Plt.	into drain	Water (Plant D)
Hydrochloric Acid (HCl)	Tank	Plant C-1 (north)	T. Plt.	Berm, drain to T.P.	Water
Hydrochloric Acid	Tank	Plant A	no drain	Diked, gravel	Water
Phosphorus Trichloride (PCl_3)	55gals Drum	#4 Warehouse	Floor	West side, open surface	Hazorb
Sodium Chlorate ($NaClO_3$)	Tank	Plant C-1 (south)	T.Plt.	Into drain and open surface	Hazorb/water
Sodium Hydroxide (NaOH)	Drum	Plant C-1 (side room)	T. Plt.	C-1 floor	Water
Sodium Nitrite ($NaNO_2$)	Tank	Plant A	no drain	Surface towards Plant A	Water
Sulfuric Acid (H_2SO_4)	Tank	Plant C-1	no drain	Diked area, concrete floor	Water

OW 220032

0041-0267



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CD 1066-1

0041-0268

OW 220033

EXHIBIT H

POLLUTION CONTROL STUDY

FOR

NATIONAL POLYCHEMICALS INC.

AT

Wilmington, Massachusetts

Job No. E-3341
August 21, 1969

The Badger Company, Inc.
Cambridge, Massachusetts

0041-0270

OW 004766

INTRODUCTION

This report presents a summary of aqueous waste disposal practices and pollution control recommendations for National Polychemicals Incorporated, Wilmington, Massachusetts. Contained herein is a description of the sewer systems as well as all processes from which aqueous wastes emanate. Recommendations are offered which will expedite the design of waste pre-treatment facilities as required by the Sewerage Division of the Metropolitan District Commission.

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- 1.21 Segregation
- 1.22 Preparation for Pretreatment

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- 2.21 Sanitary Wastes
- 2.22 Process Wastes
- 2.23 Process Descriptions
- 2.24 Cooling Water System
- 2.25 Boiler Blowdown
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3.2 Drawings
- E-3191-231A Process Sewer System Plant A
- E-3191-232A Process Sewer System Plan and Details Plant B
- E-3191-234A Process Sewer System Plan and Details Plants C-2 and C-3
- E-3191-235A Process Sewer System Plant C-1
- E-3191-240A Process Sewer System Main Plot Plan

3.3 Process Flow Diagrams
- E-3341-101A Opex Process
- E-3341-101B Kempore Process
- E-3341-101C Wytox Process
- E-3341-101D Wytox-ADP-X Process
- E-3341-101E OBSH Process

3.4 Laboratory Procedure

SECTION I

SUMMARY AND RECOMMENDATIONS

1.1 SUMMARY

As of August 15, 1969, National Polychemicals Inc. completed a major waste abatement and segregation program. As a result of the installation of closed cooling water systems, the volume of aqueious wastes have been reduced by approximately 90%. All process wastes which previously flowed into the Aberjona River have been segregated into two separate sewer systems which discharge into an enclosed acid pit southeast of the plant. The contents of the acid pit seep into the ground water table. Yard drains and floor drains from the plant flow ultimately into the Aberjona River. Sanitary wastes are treated in septic tank-field tile systems.

National Polychemicals Inc.'s waste segregation project was designed to abate pollution of the Aberjona River and to prepare for pretreatment of all process wastes prior to discharge into a new Metropolitan District Commission sewer. Construction of the proposed Metropolitan District Commission sewer which will be located adjacent National Polychemicals Inc.'s property is scheduled for completion during mid-1970.

1.2 RECOMMENDATIONS

1.21 Segregation

Floor drains in processing areas should be rerouted into the process sewer system to eliminate the possibility of a spill reaching the Aberjona River.

All storage tanks which receive bulk truck shipment of liquid chemicals should be curbed to prevent contamination of yard drainage from spills which occur during unloading. Curbed areas should be drained to the process sewer system. (Ref. Fig. I)

OW 004769

1.22 Preparation for Pretreatment

At the present time it appears that at least flow equilization and neutralization of process wastes will be required as a prerequisite for discharge into the Metropolitan District Commission sewer system. Additionally, it appears that a rationally designed oil interceptor should be installed on the yard drainage sewer system to prevent floating material from reaching the Aberjona River.

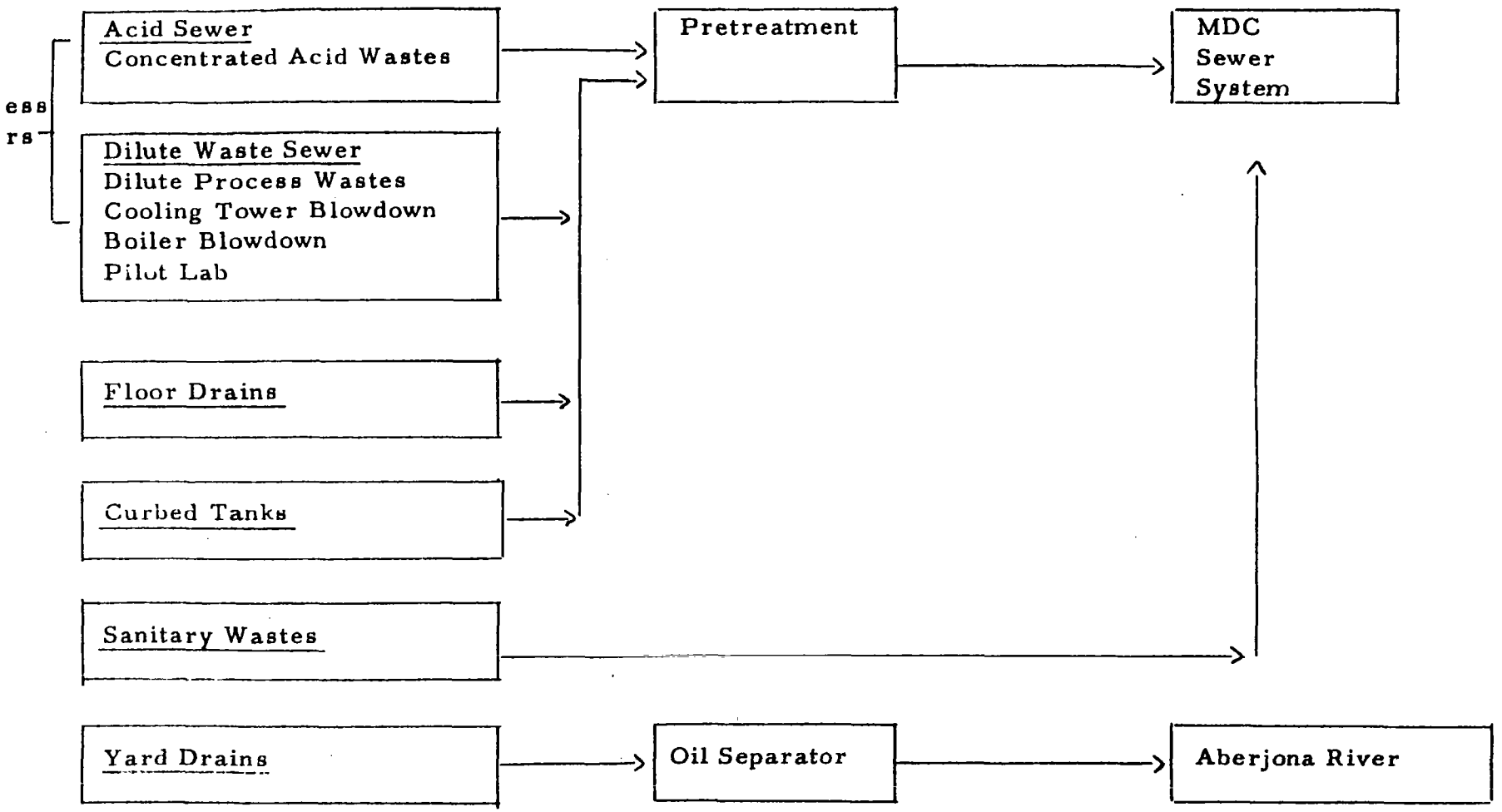


FIGURE I

NATIONAL POLYCHEMICALS INC.

Recommended Sewer Systems

0041-0274

OW 004770

1.22 Preparation for Pretreatment (cont'd)

To expedite the design of adequate pretreatment facilities a waste survey should be initiated as soon as possible. The following tests should be completed on the effluent from the process sewers and the yard drain sewer.

- Flow rate
- pH
- Alkalinity
- Acidity
- Suspended Solids (before and after neutralization with sodium hydroxide and calcium hydroxide)
- Oil and Grease
- COD
- BOD

Since the wastes emanate from batch or semi-batch operations the analyses should be performed on composite, flow proportioned samples. Laboratory analyses should conform to methodology presented in Standard Methods for the Examination of Water and Waste Water, 12th Ed. A. P. H. A., Inc. (Ref. Appendix)

SECTION II

DISCUSSION

2.1 SEWER SYSTEM

National Polychemicals Inc. has undertaken a project to segregate plant sewer systems. The new sewer systems were completed August 15, 1969. There are now three distinct sewer systems consisting of a sanitary sewer system, process sewer system and a yard and floor drainage sewer system. (Ref. Fig. II

Sanitary sewage from various locations flows via the sanitary sewer to septic tanks for gross solids removal. The effluent from the septic tanks is allowed to leach into the ground by means of conventional tile field systems.

A new 4" - 6" acid sewer system of Bondstrand series 5000 epoxy has been installed to handle concentrated acid wastes from plants C-1, C-3 and Bldg. 17. The strong acid wastes from the new acid sewer are discharged into the acid pit southeast of the plant. Construction of the new acid system was completed August 15, 1969. (Ref. Dwg. E-3191-240A)

A dilute waste system of cast iron and vitrified clay has been installed and is used to collect all process wastes other than strong acids. This dilute waste system also empties into the acid pit southeast of the plant.

All yard drainage and process area floor drainage is collected in trench drains and is discharged to a sewer which has been installed in the area where Lake Poly used to be. The yard and floor drainage system was completed August 15, 1969. The yard drainage system discharges into the creek which subsequently flows into the Aberjona River. (Ref. Dwg. E-3191-240A)

Three acid pits with a total surface area of about one half an acre are situated on an east-west line 400 ft. south of the National Polychemicals Inc. railroad spur. The center, and largest, pit has been used to contain acid wastes from the Kempore process. The liquid level in the pits appears to be about 10 ft. below grade. The east and west pits exhibit emergent vegatation and algal growths. Due to the acid environment there is apparently no life in the center pit. Since the average rainfall in New England exceeds evapo-tranpiration by approximately 20 inches per year and there are no outlets, the contents of the acid pits probably leach into the ground water table. (Ref. Dwg. E-3191-240A)

0041-0276

2.2 SOURCES OF WASTES

2.21 Sanitary Wastes

OW 004772

The sanitary sewer system services 5 urinals, 7 water closets, 6

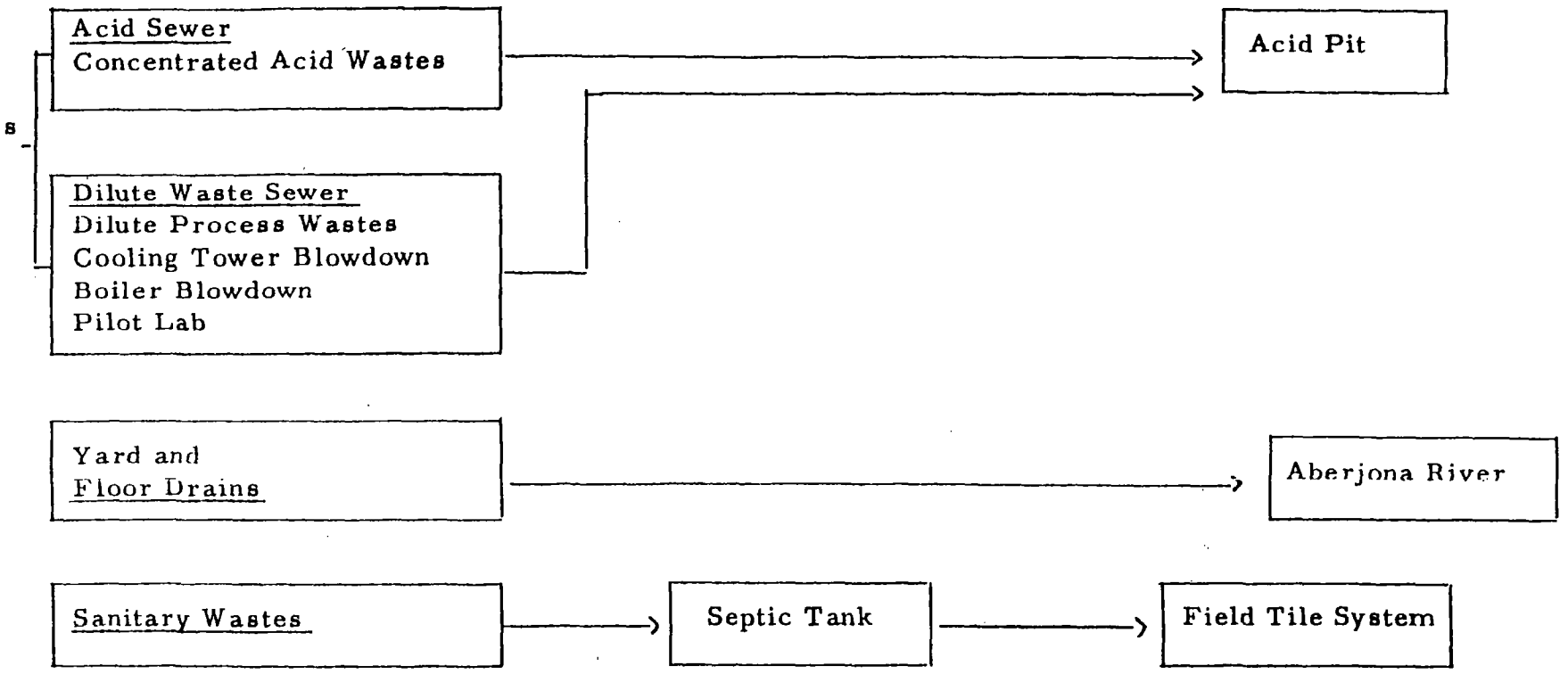


FIGURE II

NATIONAL POLYCHEMICALS INC.

SEWER SYSTEMS

as of August 15, 1969

0041-0277

OW 004773

2.21 Sanitary Wastes (cont'd)

office personnel and 53 production personnel use these fixtures on a daily basis. The sanitary systems flow into two septic tanks and subsequently into leaching fields.

2.22 Process Wastes

At present National Polychemicals Inc. is operating four processes and a coating manufacturing facility. By December 1, 1969 a fifth process facility will be in operation. The following is a synopsis of the processes with particular attention given to the wastes emanating from each process.

2.23 Process Descriptions

Opex Process (Ref. Dwg. E-3341-101A) /Dinitropentamethylenetetramine (DNPT)/ is a light yellow, slightly water soluble solid used as a blowing agent in the production of expanded rubber compounds. National Polychemicals Inc. produces 1.2×10^6 lb/yr of DNPT in 4-5 batches per 24 hours, six days per week.

Anhydrous ammonia and formaldehyde are reacted in an agitated batch type reactor fitted with an external pump through cooler to form 30% solution hexamethylenetetramine (HEXA). Upon completion of the reaction in plant B the HEXA solution is pumped to a storage tank located in plant A. HEXA and sodium nitrite are mixed in a cooled, covered compound tank. The contents of the compound tank are pumped to one of two agitated DNPT reactors which is charged with dilute hydrochloric acid and ice. As the temperature of the reactor drops DNPT percipitates out of solution. Upon completion of the reaction the contents are pumped to one of two pan filters. The product DNPT which is retained on the filter is washed with water and manually transferred into drying pans, dried and packaged.

The filtrate from the pan filter which has a pH of approximately 4 and contains sodium chloride, sodium nitrite, formaldehyde, and traces of hydrochloric acid, hexamethylenetetramine, DNPT and process oil is discharged into a retention tank where the remaining DNPT is floated off. The aqueous underflow from the retention tank is discharged to the dilute process sewer and subsequently flows into the southeast acid pit.

From material balance calculations approximately 103,000 lb/mo sodium chloride, 18,500 lb/mo formaldehyde and 10,000 lb/mo sodium nitrite are sewered from the Opex Process.

2.23 Process Descriptions (cont'd)

Kempore Process (Ref. Dwg. E-3341-101B) National Polychemicals Inc. produces 1.6 - 1.8 x 10^6 lb/yr of Kempore (Azodicarbonamide) which is a slightly water soluble, orange-yellow solid used as a rubber blowing agent. Production of Kempore is a semi-batch operation executed on a 24 hour basis 5-6 days per week.

Liquid chlorine and urea are reacted in a batch reactor located in plant C-3 to produce monochlorourea (MCU). MCU is stored in a day tank prior to a reaction with 30% sodium hydroxide in a titanium pipe reactor. The effluent from the titanium reactor is discharged into an agitated, cooled reactor where 66° Be' sulfuric acid is added producing large quantities of CO_2 which are vented to the atmosphere. The contents of the reactor are pumped to an open pan filter where a 3.0% hydrazine solution is recovered in the filtrate stream. After manual washing of the filter cake consisting of sodium sulfate and sodium chloride, the cake is dumped into an agitated salt solution tank. The salts are dissolved into hot water in the salt solution tank and discharged to the dilute process sewer which flows to the southeast acid pit.

From material balance calculations approximately 300,000 lb/mo sodium sulfate and 305,000 lb/mo sodium chloride are sewered from the hydrazine production section of the Kempore Process.

The 3.0% hydrazine filtrate solution is stored in day tanks outside plant C-3 and C-1. Hydrazine solution is pumped to plant C-1 into one of three reactors where sulfuric acid is added to form hydrazodicarbonamide (HDCA) in slurry form. HDCA is filtered on a rotary drum vacuum filter to increase the HDCA concentration. The filtrate containing sodium chloride, sodium sulfate, urea and ammonium sulfate is filtered and discharged to the dilute process sewer.

The 20% slurry of HDCA is pumped into a water cooled, agitated reactor, where sulfuric acid and sodium chlorate are added forming a heavy slurry of azodicarbonamide. The azodicarbonamide slurry is vacuum filtered, dried and packaged. Filtrate from vacuum filter containing sodium sulfate urea, azodicarbonamide and 4-8% sulfuric acid is filtered and discharged to the process acid sewer.

From material balance calculations approximately 40,000 lb/mo sodium sulfate, 164,000 lb/mo ammonium sulfate, 101,000 lb/mo urea, and 24,000 lb/mo sulfuric acid are contained in the combined filtrate streams.

2.23 Process Descriptions (cont'd)

Wytox Process (Ref. Dwg. E-3341-101C) Wytox, a liquid phosphite rubber stabilizer is produced 2-4 days per week on a batch basis amounting to one million lb/yr.

Phsophorous trichloride, paraformaldehyde and nonylphenol are reacted in an agitated vessel located in plant C-1. During the reaction 16,000 lb/mo hydrogen chloride gas evolves which is scrubbed and sewered to the acid sewer. Upon completion of the reaction the entire contents of the reactor are pumped into drums for shipping. With the exception of the scrubber liquor, there are no waste process streams which are sewered.

Wytox ADP-X Process (Ref. Dwg. E-3341-101D) Wytox ADP-X /Dioctyldiphenylamine (DODPA)/ a dark colored resinous solid is produced 3 to 5 days per week on a batch basis in plant B. National Polychemicals Inc.'s total production of DODPA is approximately 600,000 lb/yr.

Diphenylamine (DPA) and diisobutylene (DIB) undergo a Friedel-Crafts reaction through the use of an aluminum chloride catalyst. DPA and DIB are reacted with the catalyst in an agitated reactor. The reactor is fitted with a condenser and condensate drum to reflux the DIB. When the reaction has been completed, the aqueous and organic layers are allowed to separate. The aqueous layer containing sodium chloride, aluminum hydroxide, DODPA and DIB is sewered to the dilute process sewer. The organic layer is washed twice with water. Both washes are also discharged to the dilute process sewer. Following the two washings the reactor is placed under a vacuum by means of a steam jet. While under vacuum the DIB is distilled into the condensate drum leaving DODPA in the reactor. The tar-like DODPA product is discharged from the reactor and is allowed to solidify prior to grinding and packaging.

From material balance calculations approximately 19,000 lb/mo diisobutyl 1,250 lb/mo aluminum hydroxide and 2,400 lb/mo sodium chloride are discharged to the process sewer from the Wytox ADP-X Process.

O.B.S.H. Process (Ref. Dwg. E-3341-101-E) As of December 1, 1969, National Polychemicals Inc. expects to be producing 300,000 lb/yr of oxybissulfonylhydiazine (OBSH) in plant 17. OBSH, a rubber blowing agent will be produced 5 days per week on a 24 hour basis.

Diphenyloxide and chlorosulfonic acid will undergo a quench reaction producing hydrogen chloride gas, oxybissulfonyl~~oxide~~ chloride (OBSC), a white water insoluble solid, and a 15-20% sulfuric acid solution. The hydrogen chloride gas is to be scrubbed and recovered for reuse. The 15-20% sulfuric acid solution will be discharged into the new acid sewer which flows to the acid pit southeast of the plant. Process waste data is being developed in a pilot plant facili

2.23 Process Descriptions (cont'd)

O.B.S.H. Process (cont'd) - The OBSC is to be reacted with a hydrazine solution to form OBSH. The solid OBSH is to be filtered, dried and packaged. Filtrate from the product will be pumped to the Kempore Process for reuse.

Coatings National Polychemicals Inc. produces numerous coatings for rubber products. These coatings are compounded on a batch basis from the following chemicals:

Bentone
Santocel
Ufamite MM 67
Toluene
Butylacetate
Acrylic Resins
Maleic Anhydride
Glycerine
Fatty Amines
Silicone
Monoethanolamine
Mineral Oil

The production of the coatings is a non-aqueous operation without waste.

2.24 Cooling Water System

Field data has revealed that normal cooling water demands are 375 gpm with a peak demand of 555 gpm. Until recently, city water was used for cooling on a once through basis and sewered ultimately to the Aberjona River. Installation of a multi-tower closed cooling water system with a design capacity of 700 gpm was completed August 15, 1969.

The cooling towers associated with plants A, B and C-1 are to operate at a high number of cycles of concentration. Minimal blowdown to the process sewer will occur on a periodic basis. Cooling water from the plant C-3 cooling tower is to be used in the hydrazine scrubber (Kempore Process) which discharges to the process sewer and will therefore provide a 20 gpm purge for the plant C-3 cooling system.

Chemical treatment of the cooling water will be accomplished on a contract basis with a chemical supplier. The corrosion inhibition chemicals have not been selected; however, it appears than an inorganic-organic zinc inhibitor or an entirely organic inhibitor system will be used.

2.25 Boiler Systems

National Polychemicals Inc. is presently operating 15 psi boilers with a total capacity of 450 horsepower and 150 psi boilers with a total capacity of 135 horsepower. Softened city water is used for make up water. Proprietary chemicals containing amines are used for boiler scale control. Solids in the steam drum are controlled through periodic manual blowdown to the process sewer.

2.26 Yard and Floor Drainage

Yard drainage and floor washings from an area of undetermined size are sewered via the Lake Poly sewer. Contaminants from roadways, unloading areas and process areas are likely to appear in the effluent from the Lake Poly sewer system. Significant amounts of pollutants are likely to emanate from truck unloading stations such as the nonylphenol tank and process area floor drains as a result of spills.

The Lake Poly sewer now flows into an oil basin which is capable of removing gross amounts of light insoluble material. The underflow from the oil basin flows into a creek and subsequently the Aberjona River. (Ref. Dwgs. E-3191-240A and 232A)

2.3 METROPOLITAN DISTRICT COMMISSION SEWER SYSTEM

During the summer of 1970 a Metropolitan District Commission sewer is to be extended along National Polychemical Inc.'s property. (Ref. U.S.G.S. Map) The sewerage division of the Metropolitan District Commission will accept sanitary sewage as well as industrial wastes in the Metropolitan District Commission sewer system as long as the wastes conform to the following rules and regulations.

RULES AND REGULATIONS
COVERING
DISCHARGE OF SEWAGE, DRAINAGE, SUBSTANCES OR WASTES

Pursuant to authority and in compliance with the directive of the Massachusetts Legislature as found in Massachusetts Acts of 1945, Chapter 705, Section 1 the Metropolitan District Commission, at its regular meetings on August 5 and 1[illegible] 1948, voted to establish the following rules and regulations covering the discharg of sewage, drainage, substances or wastes into any sewer under its control, or any sewer tributary thereto, with the North Metropolitan S[illegible]rage District or the South Metropolitan Sewerage District.

Attention is invited to the fact that the above referred to legislation provides that failure on the part of any municipality to comply with the following rule[illegible] shall be sufficient cause for the levying and collection of addition

MDC Rules and Regulations (cont'd)

1. No municipality shall discharge or cause or allow to be discharged into any sewer under the control of the Metropolitan District Commission, or any sewer tributary thereto within the North or South Metropolitan Sewerage Districts, any sewage, drainage, substances or wastes containing caustic alkalinity, calculated as $CaCO_3$ (calcium carbonate), in excess of 75 parts per million by weight, in volumes which may be determined by the Metropolitan District Commission to be excessive.

2. No municipality shall discharge or cause or allow to be discharged into any sewer under the control of the Metropolitan District Commission, or any sewer tributary thereto within the North or South Metropolitan Sewerage Districts, any sewage, drainage, or substances or wastes containing unsaponified greasy or fatty matters in volumes which may be determined by the Metropolitan District Commission to be excessive.

3. No municipality shall discharge or cause or allow to be discharged into any sewer under the control of the Metropolitan District Commission, or any sewer tributary thereto within the North or South Metropolitan Sewerage Districts any sewage, drainage, substances or wastes containing suspended solids in exces of five hundred parts per million by weight in volumes which may be determined by the Metropolitan District Commission to be excessive, or any matters in such volumes as, in the opinion of the Commission, may tend to obstruct or impede the flow in the sewers, or be injurious to the sewers, pumps or other portions of the sewerage systems or be likely to create a nuisance or a hazard within or without said sewers.

4. No municipality shall discharge or permit to be discharged into any sewer under the control of the Metropolitan District Commission, or any sewer tributary thereto, within the North or South Metropolitan Districts, free mineral acids in quantities which the Metropolitan District Commission determines to be excessive.

5. No municipality shall cause or allow to be discharged into any sewer under the control of the Metropolitan District Commission or any sewer tributary thereto within the North and South Metropolitan Sewerage Districts, any sewage, drainage, substances or wastes from an industrial or manufacturing plant unless measuring devices or other means of measuring the flow of the sewage, drainage substances or wastes are provided at the request of and in accordance with the approval of the Metropolitan District Commission, and the records of flow from such measuring devices shall be furnished the Metropolitan District Commission upon request therefor.

6. All applications to discharge any sewage, drainage, substances or wastes directly into any sewer under the control of the Metropolitan District Commission shall be accompanied by an agreement signed jointly by the owner

of the industry contributing such sewage, drainage, substances or wastes and a representative of the municipality in which the connection is located who is authorized to sign agreements on behalf of the said municipality stating that the manufacturer or industry in question agrees to abide by all rules and regulations of the municipality and the Metropolitan District Commission and that the owner of the industry will provide suitable devices or other means of measurir the flow of the sewage, drainage, substances or wastes and will provide such work for the preliminary treatment of the sewage, drainage, substances or wastes as may be required by the Metropolitan District Commission.

7. No municipality shall discharge or cause or allow to be discharged into any sewer under the control of the Metropolitan District Commission or any sewer tributary thereto within the North or South Metropolitan Sewerage Districts, any sewage, drainage, substances or wastes which are of an explosive or inflammable nature.

8. Municipalities will be held responsible for the enforcement of Section of the rules and regulations of the Massachusetts Department of Public Safety necessitating that garages and other establishments where gasoline is used and which are connected with the public sewers in the North or South Metropolitan Sewerage Districts be supplied with a suitable trap or separator. Such traps and separators shall be subject to the approval of the Metropolitan District Commissi

9. No municipality shall contract for the building of additional sewerage works contemplated for connection into the Metropolitan Sewerage System until plans and specifications covering such works are submitted to and approved by th Chief Sewerage Engineer of the Metropolitan District Commission, and notice is hereby given that the Metropolitan District Commission will not approve, excep under extraordinary conditions, any works designed on the so-called combined system or the discharge of processing or condensing water which the Department of Public Health determines is sufficiently free from contamination to permit its discharge into the nearest water course.

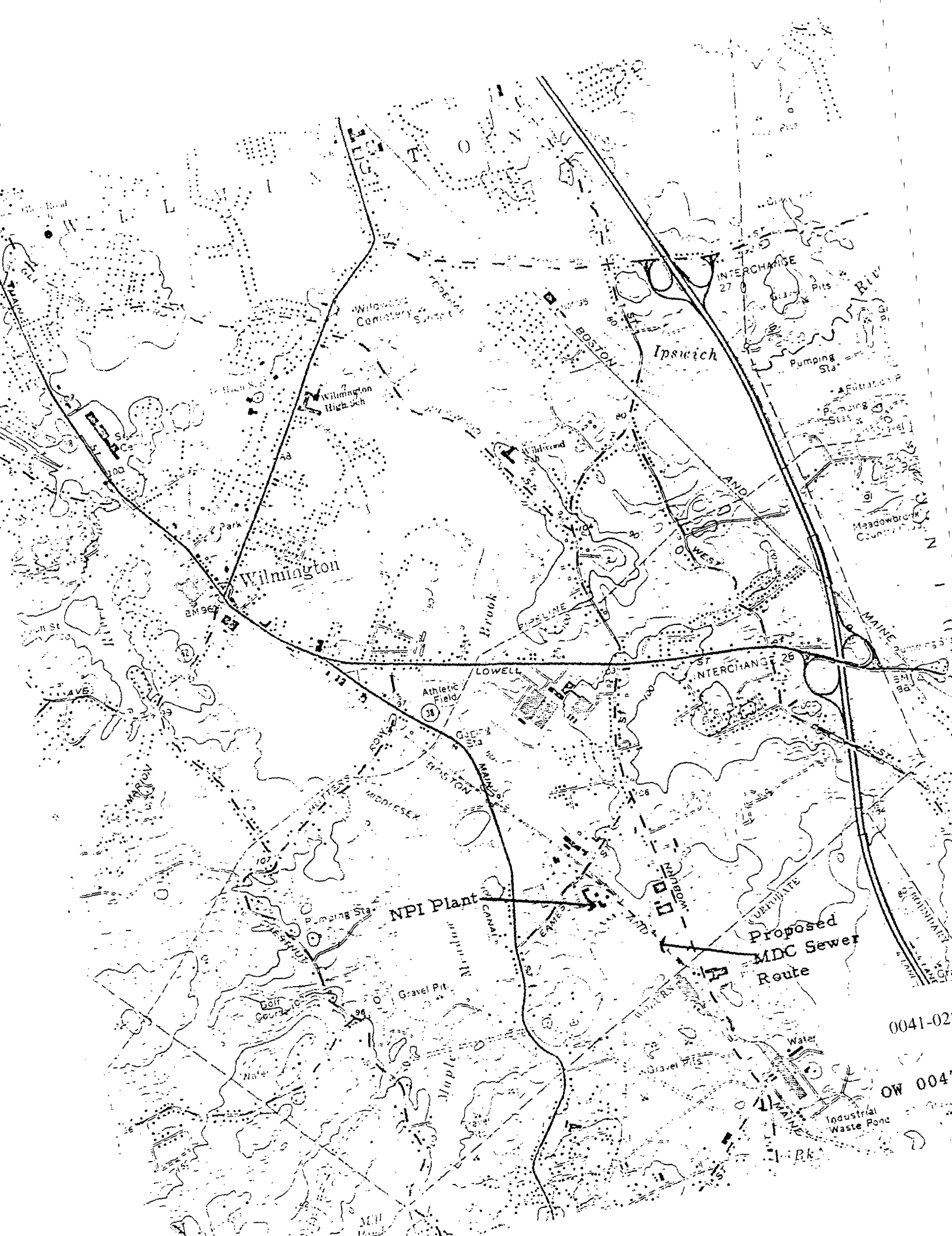
10. No municipality shall discharge or permit to be discharged into the Metropolitan Sewerage System, or tributaries thereto, sewage, drainage, substances or wastes containing amounts of ground, tide, or river water determined by the Metropolitan District Commission to be excessive.

* Now Section 28 of Form F.P.R.-14 of the Rules and Regulations of the Board of Fire Prevention of the Department of Public Safety.

SECTION III

APPENDIX

3.1 U.S.G.S. Map



Wilmington
Ipswich
INTERCHANGE 27
INTERCHANGE 26
Wilmington High Sch
Wildwood Cemetery
Wildwood Sch
Athletic Field
Gaging Sta
Pumping Sta
Meadowbrook Country Club
Industrial Waste Pond
Gravel Pit
Gravel Pits
Water
NPI Plant
Proposed MDC Sewer Route
0041-02
OW 004

3.2 DRAWINGS

E-3191-231A	Process Sewer System Plant A
E-3191-232A	Process Sewer System Plan and Details Plant B
E-3191-234A	Process Sewer System Plan and Details Plants C-2 and C-3
E-3191-235A	Process Sewer System Plant C-1
E-3191-240A	Process Sewer System Main Plot Plan

0041-0288

Dwg. No. 3191-231A

OW 0

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Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

March 24, 1983

Ms Eileen McElroy
Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Division of Hazardous Waste
One Winter Street, 8th Floor
Boston, Massachusetts 02108

RE: Revised Annual Report

Dear Ms McElroy:

On March 1, 1983, Department of Quality Engineering was sent an annual Hazardous Waste Report for Olin's Wilmington, Massachusetts, facility.

Further evaluation of both our records and the original Annual Report has revealed some inadvertent omissions. Accordingly, we are now submitting a revised report.

If you have any questions on this report, feel free to call Jim Martucci at (617) 933-4240.

Sincerely,

OLIN CORPORATION

Ronald J. McBrien

Ronald J. McBrien
Plant Manager

RMc/bab

0041-0304

Commonwealth of Massachusetts

Department of Environmental Quality Engineering

ANNUAL HAZARDOUS WASTE REPORT

This form must be used for submission of annual reports by generators of hazardous waste and facilities which treat, store, use, or dispose of hazardous waste that is generated at the facility site. You may request that any information, records, or particular part thereof be kept confidential and not considered to be public record when such information, record, or report relates to secret processes, methods of manufacture, or production and, if made public, would divulge a trade secret. Please refer to the specific instructions for generators or facilities before completing this form.

1. Type of report: Generator Annual Report - Part 1A

2. Reporting year: 1982

3. Installation's name and identification number: Olin Corporation
MAD001403104

4. Installation address: 51 Eames Street
Wilmington, MA 01887-3393

5. Installation Contact and telephone number: James Martucci
617/933-4240 Ext. 36

6. Transportation Services used (for Part 1A reports only):
1.) NYD088658646, 2.) MAD062179890, 3.) NYD051809952, 4.) NJD071629976

7. Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with Part 12 of the regulations.

Ronald J. McBrien	Ronald J. McBrien	4/4/83
Print or type name	Authorized Signature	Date signed

0041-0305

8. Generator's identification number: MAD001403104

9. Facility's identification number: NYD080336241

0. Facility name: CECOS International, Inc.

1. Facility address (street or P.O. Box, city, state, & zip code):
56th & Pine Avenue, Niagara Falls, NY 14302

2. Waste identification:

Line Number	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Absorbent booms contaminated with bis (2-ethylhexyl) phthalate (Doctylphthalate)	12	U028 (U107)	54 drums
2	Azodicarbonamide/bis(2-ethylhexyl)phthalate (Dioctylphthalate) Dispersion waste	12	U028 (U107)	56 drums
3	Phenol	15	U188	2 drums
4	Sodium azide Polyethylene liners	15	P105	4 drums
5	Dinitrosopentamethylenetetramine	08	D001	5 drums
6	Trisnonylphenyl phosphite contaminated with bis(2-ethylhexyl) phthalate (Doctylphthalate)	12	U028 (U107)	11 drums
7	Waste Polymeric phosphite/Azodicarbonamide	12	D001	3 drums
8				

3. Comments (enter information by line number - see instructions):

Land 2. 107 drums of waste containing bis(2-ethylhexyl) phthalate were shipped with EPA Code #U107 instead of #U028.

Note: 509 drums of Non-hazardous material were also shipped to CECOS International Inc.

8. Generator's identification number: MAD001403104

9. Facility's identification number: NJD053288239

10. Facility name: Rollins Environmental Services, N.J., Inc.

11. Facility address (street or P.O. Box, city, state, & zip code):
RT 322 Bridgeport, NJ 08014

12. Waste identification:

Line Number	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Ignitable liquid - Diallylamine	07	D001	1 drum
2	Ignitable liquid - Wytox[R] PAP (Polymeric Alkylated Phenol)	01	D001	5 drums
3	Benzene	07	D001	1 drum
4	Commercial Methyl Alcohol	07	U154	2 drums
5				
6				
7				
8				

13. Comments (enter information by line number - see instructions):

Note: 50 drums of non-hazardous material waste were also shipped to Rollins Environmental Services, N.J., Inc.

GENERATOR ANNUAL REPORT - PART IA

8. Generator's identification number: MAD001403104

9. Facility's identification number: NYD049836679

10. Facility name: SCA Services, Inc.

11. Facility address (street or P.O. Box, city, state, & zip code):
1550 Balmer Road, Model City, NY 14107

12. Waste identification:

Line Number.	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Dirt contaminated with bis(2-ethylhexyl) phthalate	12	U028	1.1×10^6 pounds
2				
3				
4				
5				
6				
7				
8				

13. Comments (enter information by line number - see instructions):

1. Bulk shipment.

GENERATOR ANNUAL REPORT - PART IA

8. Generator's identification number: MAD001403104

9. Facility's identification number: OHD000816629

0. Facility name: CECOS International, Inc.

1. Facility address (street or P.O. Box, city, state, & zip code):
4879 Springgrove Avenue, Cinninatti,OH 45232

2. Waste identification:

Line Number.	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Transformer containing PCB's at 501 ppm	12	M002	2300 lbs.
2				
3				
4				
5				
6				
7				
8				

. Comments (enter information by line number - see instructions):

0041-0309

Commonwealth of Massachusetts

Department of Environmental Quality Engineering

ANNUAL HAZARDOUS WASTE REPORT

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1. Type of report: Facility Annual Report - Part 1B

2. Reporting year: 1982

3. Installation's name and identification number: OLIN CORPORATION
MAD001403104

4. Installation address: 51 Eames Street
Wilmington, MA 01887-3393

5. Installation Contact and telephone number: James Martucci
617/933-4240 Ext. 36

6. Transportation Services used (for Part 1A reports only): N/A

7. Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with Part 12 of the regulations.

Ronald J. McBrien	Ronald J. McBrien	4/4/83
Print or type name	Authorized Signature	Date signed

0041-0310

14. Waste identification:

Line Number	A. Description of Waste	B Hazardous Waste Number	C Handling Method	D Amount of Waste
1	Absorbent booms contaminated with bis(2-ethylhexyl) phthalate (dioctylphthalate)	U028	S01	54 drums
2	Azodicarbonamide/bis(2-ethylhexyl)phthalate (Dioctylphthalate) Dispersion waste	U028	S01	75 drums
3	Phenol	U188	S01	2 drums
4	Sodium azide Polyethylene Liners	P105	S01	5 drums
5	Ignitable Liquid Diallylamine	D001	S01	1 drum
6	Ignitable Liquid Hexane	D001	S01	1 drum
7	Ignitable Liquid Wytox^{R} PAP (Polymeric alkylated phenol)	D001	S01	5 drums
8	Benzene	U019	S01	1 drum

15. Comments (enter information by line number):

16. Cost estimates for facilities:

Closure $ (see page 2) Post-Closure $ N/A

0041-0311

14. Waste identification:

Line Number	A. Description of Waste	B Hazardous Waste Number	C Handling Method	D Amount of Waste
9.	Commercial Methyl Alcohol	U154	S01	2 drums
10.	Waste Oil	M001	S01	19 drums
11.	Transformer containing PCB's at 501 ppm	M002	S01	2300 lbs.
12.	Dinitrosopentamethylenetetramine	D001	S01	5 drums
13.	Methanol spent solvent mixture	D001 (F003)	S01	9 drums
6				
7				
8				

15. Comments (enter information by line number):

10. #415 processing oil and various maintenance oils.

16. Cost estimates for facilities:

Closure $ 86,450 Post-Closure $ N/A

0041-0312

14. Waste identification:

Line Number	A. Description of Waste	B Hazardous Waste Number	C Handling Method	D Amount of Waste
1	Waste Hydrochloric Acid	D002	SO2	125 tons
2				
3				
4				
5				
6				
7				
8				

15. Comments (enter information by line number):

1. Neutralized and discharged to POTW (MDC sewer)

16. Cost estimates for facilities:

Closure $ 38,000 Post-Closure $ N/A

0041-0313

(FILE)

RMc, MT, DV
G.H.

Commonwealth of Massachusetts

Department of Environmental Quality Engineering

ANNUAL HAZARDOUS WASTE REPORT

This form must be used for submission of annual reports by generators of hazardous waste and facilities which treat, store, use, or dispose of hazardous waste that is generated at the facility site. You may request that any information, records, or particular part thereof be kept confidential and not considered to be public record when such information, record, or report relates to secret processes, methods of manufacture, or production and, if made public, would divulge a trade secret. Please refer to the specific instructions for generators or facilities before completing this form.

1. Type of report: Generator Annual Report – Part 1A

2. Reporting year: 1981

3. Installation's name and identification number: Olin Corporation
MAD001403104

4. Installation address: 51 Eames Street Wilmington, MA 01887-3393

5. Installation Contact and telephone number: Muhammad Ahsan, 617/933-4240 ext. 36

6. Transportation Services used (for Part 1A reports only): 1) Recycling Industries Inc.
2) Newco Waste System Inc. 4) Frontier Chemical Waste Process Inc.
3) Tonawanda Tank Transport Service

7. Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with Part 12 of the regulations.

Ronald J. McBrien	Ronald J. McBrien	3/1/82
Print or type name	Authorized Signature	Date signed

M.A. Ahsan
3/1/82.

0041-0314

GENERATOR ANNUAL REPORT - PART 1A

8. Generator's identification number: MAD001403104

9. Facility's identification number: NYD043815703

10. Facility name: Frontier Chemical Waste Process Inc.

11. Facility address (street or P.O. Box, city, state, & zip code): 4626 Royal Ave, Niagara Falls, N.Y. 14303

12. Waste identification:

Line Number.	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Waste By-product Ammonia from Kempore* Manufacturing	02	D002	10,000 gal.
2				
3				
4				
5				
6				
7				
8				

13. Comments (enter information by line number - see instructions):

*Azodicarbonamide.

0041-0315

GENERATOR ANNUAL REPORT - PART 1A

8. Generator's identification number: MAD0014033104

9. Facility's identification number: MAD053452637

10. Facility name: Recycling Industries, Inc.

11. Facility address (street or P.O. Box, city, state, & zip code): 385 Quincy Ave
Braintree, MA 02184

12. Waste identification:

Line Number	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	A-01 PCB Capacitors for disposal (two capacitors)	12	M002	1 drum
2	Waste flammable liquid N-O-S	07	D001	42 drums
3	Non-Hazardous Waste liquid	NONE	N/A	19 drums
4	Waste calcium stearate/water	NONE	N/A	22 drums
5				
6				
7				
8				

13. Comments (enter information by line number - see instructions):

2. Ignitable waste/azodicarbonamide.

3. Epoxidized soy-bean oil, polymeric hindered phenol silicondioxide, polymeric phosphite, heat transfer liquid, naphthenic oil/refined paraffinic oil

4. Non-hazardous waste

0041-0316

GENERATOR ANNUAL REPORT - PART 1A

8. Generator's identification number: MAD001403104

9. Facility's identification number: NYD080336241

10. Facility name: Cecos International Inc.

11. Facility address (street or P.O. Box, city, state, & zip code): 56th Street, & P Ave, Niagara Falls, NY 14307

12. Waste identification:

Line Number	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Waste 4,4' Oxybis (benzenesulfonhydrazide)	08	D003	16 drums
2	Waste 4, 4' Oxybisbenzeresulfonchloride)	N/A	N/A	59 drums
3	Waste Parafomaldehyde, solid	ORM-A	U182	69 drums
4	Formaldehyde Fiber glass Storage tank, (Pieces) Solid	ORM-A	U122	8 cu.yd.
5	Non-hazardous waste, solid Fiber drum	N/A	N/A	16 drums
6				
7				
8				

13. Comments (enter information by line number - see instructions):

2. Non-Hazardous waste

5. Empty fiber drums

0041-0317

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

March 24, 1983

Ms Eileen McElroy
Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Division of Hazardous Waste
One Winter Street, 8th Floor
Boston, Massachusetts 02108

RE: Revised Annual Report

Dear Ms McElroy:

On March 1, 1983, Department of Quality Engineering was sent an annual Hazardous Waste Report for Olin's Wilmington, Massachusetts, facility.

Further evaluation of both our records and the original Annual Report has revealed some inadvertent omissions. Accordingly, we are now submitting a revised report.

If you have any questions on this report, feel free to call Jim Martucci at (617) 933-4240.

Sincerely,

OLIN CORPORATION

Ronald J. McBrien

Ronald J. McBrien
Plant Manager

RMc/bab

0041-0318

Commonwealth of Massachusetts

Department of Environmental Quality Engineering

ANNUAL HAZARDOUS WASTE REPORT

This form must be used for submission of annual reports by generators of hazardous waste and facilities which treat, store, use, or dispose of hazardous waste that is generated at the facility site. You may request that any information, records, or particular part thereof be kept confidential and not considered to be public record when such information, record, or report relates to secret processes, methods of manufacture, or production and, if made public, would divulge a trade secret. Please refer to the specific instructions for generators or facilities before completing this form.

1. Type of report: Generator Annual Report - Part 1A

2. Reporting year: 1982

3. Installation's name and identification number: Olin Corporation MAD001403104

4. Installation address: 51 Eames Street Wilmington, MA 01887-3393

5. Installation Contact and telephone number: James Martucci 617/933-4240 Ext. 36

6. Transportation Services used (for Part 1A reports only): 1.) NYD088658646, 2.) MAD062179890, 3.) NYD051809952, 4.) NJD071629976

7. Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with Part 12 of the regulations.

Ronald J. McBrien	Ronald J. McBrien	4/4/83
Print or type name	Authorized Signature	Date signed

0041-0319

8. Generator's identification number: MAD001403104

9. Facility's identification number: NYD080336241

10. Facility name: CECOS International, Inc.

11. Facility address (street or P.O. Box, city, state, & zip code):
56th & Pine Avenue, Niagara Falls, NY 14302

12. Waste identification:

Line Number	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Absorbent booms contaminated with bis (2-ethylhexyl) phthalate (doctylphthalate)	12	U028 (U107)	54 drums
2	Azodicarbonamide/bis(2-ethylhexyl)phthalate (Dioctylphthalate) Dispersion waste	12	U028 (U107)	56 drums
3	Phenol	15	U188	2 drums
4	Sodium azide Polyethylene liners	15	P105	4 drums
5	Dinitrosopentamethylenetetramine	08	D001	5 drums
6	Trisnonylphenyl phosphite contaminated with bis(2-ethylhexyl) phthalate (Doctylphthalate)	12	U028 (U107)	11 drums
7	Waste Polymeric phosphite/Azodicarbonamide	12	D001	3 drums
8				

13. Comments (enter information by line number - see instructions):

Land 2. 107 drums of waste containing bis(2-ethylhexyl) phthalate were shipped with EPA Code #U107 instead of #U028.

Note: 509 drums of Non-hazardous material were also shipped to CECOS International Inc.

8. Generator's identification number: MAD001403104

9. Facility's identification number: NJD053288239

0. Facility name: Rollins Environmental Services, N.J., Inc.

1. Facility address (street or P.O. Box, city, state, & zip code):
RT 322 Bridgeport, NJ 08014

2. Waste identification:

Line Number	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Ignitable liquid - Diallylamine	07	D001	1 drum
2	Ignitable liquid - Wytox^{R} PAP (Polymeric Alkylated Phenol)	01	D001	5 drums
3	Benzene	07	D001	1 drum
4	Commercial Methyl Alcohol	07	U154	2 drums
5				
6				
7				
8				

3. Comments (enter information by line number - see instructions):

Note: 50 drums of non-hazardous material waste were also shipped to Rollins Environmental Services, N.J., Inc.

8. Generator's identification number: MAD001403104

9. Facility's identification number: NYD049836679

0. Facility name: SCA Services, Inc.

1. Facility address (street or P.O. Box, city, state, & zip code):
1550 Balmer Road, Model City, NY 14107

2. Waste identification:

Line Number	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Dirt contaminated with bis(2-ethylhexyl) phthalate	12	U028	1.1×10^6 pounds
2				
3				
4				
5				
6				
7				
8				

3. Comments (enter information by line number - see instructions):

1. Bulk shipment.

GENERATOR ANNUAL REPORT - PART IA

8. Generator's identification number: MAD001403104

9. Facility's identification number: OHD000816629

10. Facility name: CECOS International, Inc.

11. Facility address (street or P.O. Box, city, state, & zip code):
4879 Springgrove Avenue, Cinninatti,OH 45232

12. Waste identification:

Line Number	A. Description of Waste	B DOT Hazard Class	C Hazardous Waste Number	D Amount of Waste
1	Transformer containing PCB's at 501 ppm	12	M002	2300 lbs.
2				
3				
4				
5				
6				
7				
8				

13. Comments (enter information by line number - see instructions):

Commonwealth of Massachusetts

Department of Environmental Quality Engineering

ANNUAL HAZARDOUS WASTE REPORT

This form must be used for submission of annual reports by generators of hazardous waste and facilities which treat, store, use, or dispose of hazardous waste that is generated at the facility site. You may request that any information, records, or particular part thereof be kept confidential and not considered to be public record when such information, record, or report relates to secret processes, methods of manufacture, or production and, if made public, would divulge a trade secret. Please refer to the specific instructions for generators or facilities before completing this form.

1. Type of report: Facility Annual Report - Part 1B

2. Reporting year: 1982

3. Installation's name and identification number: OLIN CORPORATION
MAD001403104

4. Installation address: 51 Eames Street
Wilmington, MA 01887-3393

5. Installation Contact and telephone number: James Martucci
617/933-4240 Ext. 36

6. Transportation Services used (for Part 1A reports only): N/A

7. Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with Part 12 of the regulations.

Ronald J. McBrien	Ronald J. McBrien	4/4/83
Print or type name	Authorized Signature	Date signed

0041-0324

14. Waste identification:

Line Number	A. Description of Waste	B Hazardous Waste Number	C Handling Method	D Amount of Waste
1	Absorbent booms contaminated with bis(2-ethylhexyl) phthalate (dioctylphthalate)	U028	S01	54 drums
2	Azodicarbonamide/bis(2-ethylhexyl)phthalate (Dioctylphthalate) Dispersion waste	U028	S01	75 drums
3	Phenol	U188	S01	2 drums
4	Sodium azide Polyethylene Liners	P105	S01	5 drums
5	Ignitable Liquid Diallylamine	D001	S01	1 drum
6	Ignitable Liquid Hexane	D001	S01	1 drum
7	Ignitable Liquid Wytox^{R} PAP (Polymeric alkylated phenol)	D001	S01	5 drums
8	Benzene	U019	S01	1 drum

15. Comments (enter information by line number):

16. Cost estimates for facilities:

Closure $ (see page 2) Post-Closure $ N/A

14. Waste identification:

Line Number	A. Description of Waste	B Hazardous Waste Number	C Handling Method	D Amount of Waste
9.	Commercial Methyl Alcohol	U154	S01	2 drums
10.	Waste Oil	M001	S01	19 drums
11.	Transformer containing PCB's at 501 ppm	M002	S01	2300 lbs.
12.	Dinitrosopentamethylenetetramine	D001	S01	5 drums
13.	Methanol spent solvent mixture	D001 (F003)	S01	9 drums
6				
7				
8				

15. Comments (enter information by line number):

10. #415 processing oil and various maintenance oils.

16. Cost estimates for facilities:

Closure $ 86,450 Post-Closure $ N/A

0041-0326

14. Waste identification:

Line Number	A. Description of Waste	B Hazardous Waste Number	C Handling Method	D Amount of Waste
1	Waste Hydrochloric Acid	D002	S02	125 tons
2				
3				
4				
5				
6				
7				
8				

15. Comments (enter information by line number):

1. Neutralized and discharged to POTW (MDC sewer)

16. Cost estimates for facilities:

Closure $ 38,000 Post-Closure $ N/A

0041-0327

ANNUAL HAZARDOUS WASTE REPORT

PART I

This form must be used for submission of Annual Reports by:

- Generators who meet the definition of Large Quantity Generator, or who generate any amount of PCB wastes in concentrations of 50 ppm or greater.
- Facilities which treat, store, use or dispose of hazardous waste at the site of generation.
- Owners/operators of wastewater treatment units (as defined in 310 CMR 30.605).

Please refer to the Part I Instructions before completing this form.

1. Type of Report (s): check where applicable

   (X) Generator (X) Treatment, Storage, Disposal Facility and/or Wastewater Treatment Unit

2. Reporting Year: Year ending 19 83

3. EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

4. Installation's Name: OLIN CORPORATION

5. Installation's Address: 51 Eames Street
   Wilmington, MA 01887-3393

6. Installation Contact: James Martucci Tel. No.: (617) 933-4240

ATTACH MAILING LABEL IF INCORRECT

7. Does your installation discharge process wastewater? X Yes ____ No
   If No, continue to question 8. If Yes, complete the appropriate line(s):
   (a) NPDES Permit Number MA0005304 (b) Municipal sewerage system MDC (Name)

   Do any of the wastewater discharges indicated in (a) or (b) involve hazardous waste activity?
   ____ Yes Which? ____ (a) ____ (b)

8. Is your installation listed as an Air Quality Source Registration? X Yes ____ No

9. Transportation Services Used: (List name and EPA ID number of each.)
   Jetline Transit MAD062179890
   Clean Harbors Inc. MAD000846352

10. Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with 310 CMR 3.00, Regulations Governing Access to and Confidentiality of Department Records and Files under the Hazardous Waste Management Act.

Ronald J. McBrien JFM
Authorized Signature of Owner/Operator or Designated Official

2/28/84
Date Signed

Ronald J. McBrien
Print or Type Name

Plant Manager
Title of Person Si

0041-0328

PART 2

GENERATOR ANNUAL REPORT

Reproduce additional pages as necessary. Enter the page number of each sheet, as well as the total number of pages, in the lower right corner.

11. Generator's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

12. On-Site Treatment as an Integral Part of the Manufacturing Process: (This is an optional question.)

A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method

13. Waste Shipped Off-Site: (Complete a separate Part 2 Form for each facility to which waste was shipped.)

a) Name of Facility: SCA SERVICES, INC.

b) EPA ID Number: N Y D 0 4 9 8 3 6 6 7 9

c) Address (Street or P.O. Box): 1550 Balmer Road

(City, State and Zip Code): Model City, NY 14107

Line Number	A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
1	Hazardous Waste Solid N.O.S. (Bis-2 Ethlyhexyl Phthalate)	U028	316,250	P	D80

0041-0329

14. Comments (refer to line number):

1. Bulk Shipments

PART 2

(Continued)

13. Waste Shipped Off-Site: (Complete a separate Part 2 form for each facility to which waste was shipped.)

a) Name of Facility: CHEMICAL WASTE MANAGEMENT INC.

b) EPA ID Number: O H D 0 6 8 1 1 1 3 2 7

c) Address (Street or P.O. Box): 2626 East Broadway

(City, State and Zip Code): Northwood, OH 43619

Line Number	A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
1.	Hazardous Waste Solid N.O.S. (Waste Oil)	M001	2860	G	D80

14. Comments: (refer to line number)

NOTE: A. Bulk shipment of 81,250 lbs. of Non-Hazardous material was also shipped to Chemical Waste Management Inc.

B. 170 Drums of Non-Hazardous material were also shipped to Chemical Waste Management Inc.

1. Various oils solidified with inert solids.

0041-0330

PART 2

(Continued)

13. Waste Shipped Off-Site: (Complete a separate Part 2 form for each facility to which waste was shipped.)

a) Name of Facility: CHEMICAL WASTE MANAGEMENT, INC.

b) EPA ID Number: A L D 0 0 0 6 2 2 4 6 4

c) Address (Street or P.O. Box): P.O. Box 55

(City, State and Zip Code): Emelle, AL 35459

Line Number	A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
1	Hazardous Waste Solid N.O.S. (Bis 2-Ethylhexyl Phthalate)	U028	770	G	D80
1	Hazardous Waste Liquid N.O.S. (Waste Oil)	M001	880	G	D80
1	Waste Flammable Solid N.O.S. (Dinitrosopentamethylenetetramine)	D001	330	G	D80

14. Comments: (refer to line number)

NOTE: 47 drums of Non-Hazardous material were also shipped to CHEMICAL WASTE MANAGEMENT, INC.

0041-0331

PART 3

FACILITY ANNUAL REPORT

15. Facility's EPA Identification Number: MAD001403104

16. Waste Identification:

Line Number	A Description of Waste	B Hazardous Waste Number	C Handling Method	D Amount of Waste	E Unit of Measure
1	Hazardous Waste Solid N.O.S. (Bis-2 Ethlyhexyl Phthalate)	U028	S03	316,250	P
2	Waste Petroleum Oil N.O.S. (#2 Oil & Water)	M001	S01	300	G
3	Waste Petroleum Oil N.O.S. (Waste Oils)	M001	S01	1725	G
4	Hazardous Waste Solid N.O.S. (Waste Oil with inert solids)	M001	S01	3035	G
5	Waste Combustible liquid N.O.S.	D001	S01	385	G
6	Hazardous Waste Liquid N.O.S. (Waste Oils)	M001	S01	880	G
7	Waste Flammable Solids N.O.S. (Dinitrosopentamethylenetetramine)	D001	S01	330	G
8	Hazardous Waste Solid N.O.S. (Bis-2 Ethlyhexyl Phthalate)	U028	S01	5400	P

17. Recovered Materials: (Optional)

Line Number	A Description of Material	B Handling Method	C Amount	D Unit of Measure

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

March 4, 1985

Mr. William F. Cass
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Division of Hazardous Waste
One Winter Street
Boston, Massachusetts 02108

Dear Mr. Cass:

Enclosed is a signed copy of Olin's Wilmington facility's 1984 Annual Hazardous Waste Report. An unsigned copy was inadvertently mailed to your office previously. If there are any questions please contact Mr. James Martucci at (617) 933-4240.

Very truly yours,

OLIN CORPORATION

Ronald J. McBrien

Ronald J. McBrien
Plant Manager
JFM

Enclosure
RMc/rlg

0041-0333

TRANSMITTAL STATEMENT

to be mailed with the Annual Report

OLIN CORPORATION — MAD001403104

Name of Installation — EPA Identification No.

Please check the appropriate response(s):

1. X We are submitting the Annual Report as required.

2. _____ We are submitting Part 1 of the Annual Report but do not feel we are required to complete Parts 2 or 3 for the following reasons:

   _____ We did not manifest any hazardous waste (in quantities described in Who Must File) but will retain our status as a Generator for possible future use.

   _____ We did not manifest hazardous waste in the quantities described in Who Must File and would like to change our status to Small Quantity Generator.*

   _____ We did not manifest any hazardous waste, or did not generate as much as 20 kilograms of non-acutely hazardous waste in any one month, at this address and request that our EPA ID Number be withdrawn.*

   _____ We moved our operation during 1984 and are now located at:

   _____

   _____

   New EPA Identification Number: _____

   _____ We generate only waste oil.

* Companies requesting a change of status will be sent a Certification Statement to be completed. The change of status will be confirmed by DEQE in writing. Companies contemplating a move during 1985 should apply for a new EPA Identification Number and Certification Statement to withdraw their existing ID prior to the move.

PUBLICATION #13874-7-2500-12-84-C.R.
APPROVED BY: Daniel Carter, Purchasing Agent

ANNUAL HAZARDOUS WASTE REPORT

PART 1

Part 1 of the Annual Report is to be completed by all respondents.

1. Current Status of Installation: check where applicable

(x)Generator (x)Treatment, Storage, Disposal Facility ( )Wastewater Treatment Unit

2. Reporting Year: Year ending 19 84

3. EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

4. Installation's Name: OLIN CORPORATION

5. Installation's Address: 51 Eames Street

Wilmington, MA 01887

6. Installation Contact: James Martucci Tel. No.: 617-933-4240

7. Does your installation discharge process wastewater? x Yes ___ No

If yes: (a) NPDES Permit Number MA0005304

(b) Municipal sewerage system MDC

Is the wastewater considered hazardous prior to processing?

___ Yes x No (If yes, complete Part 3, line 16.)

8. Is your installation registered with the Division of Air Quality Control?

x Yes ___ No (For verification, contact your DEQE Regional office.)

9. Transportation Services Used: (List name and EPA ID Number of each.)

D & J Transportation Specialists NYD 088658646,

SCA Chemical Services, Inc. MAD053452637,

Price Trucking Corporation NYD046765574, Clean Harbors Inc. MAD000846352

10. Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with 310 CMR 3.00, Regulations Governing Access to and Confidentiality of Department Records and Files under the Hazardous Waste Management Act.

Ronald J. McBrien — *Authorized Signature of Owner/Operator or Designated Official*

March 1, 1985 — *Date Signed*

Ronald J. McBrien — *Print or Type Name*

Plant Manager — *Title of Person Signing*

ATTACH MAILING LABEL IF INCORRECT

PART 2

GENERATOR ANNUAL REPORT

To complete this part of the report, refer to all your manifests for the calendar year. Separate your manifests by receiving facility.

11. Generator's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

12. Waste Shipped Off-Site: (Complete a separate page for each facility to which waste was shipped. Reproduce additional pages as necessary.)

a) Name of Receiving Facility: Chemical Waste Management

b) Facility EPA ID Number: 0 H D 0 6 8 1 1 1 3 2 7

c) Facility Address: 2625 East Broadway, Northwood Ohio 43619
(Street or P.O. Box) (City) (State)

(If the waste was exported to a foreign country, enter Waste Exported on line b. and identify the U.S. border point of departure in Comments, line 13.)

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E Receiving Facility Handling Code
1	Hazardous Waste Solid, ~~N.O.S. (waste oil)~~	M001	110	G	D80

Instructions:

A. To identify your wastes, refer to your manifests. The description will usually be the U.S. DOT shipping name. Use a separate line for each type of waste. Number lines consecutively. Duplicate page as necessary.

B. The EPA Waste Number (Block I. on the Uniform Manifest Form) can also be found in Massachusetts regulations, 310 CMR 30.120-30.136. The number will be a 4-digit code, beginning with a letter, followed by 3 numbers.

C. Enter the total amount of this particular waste which was shipped to this facility during the calendar year.

D. The unit codes are: G - gallons; P - pounds; T - tons; Y - cubic yards. If you shipped waste in 55 gal. drums, multiply number of drums by 55, enter G.

E. Receiving facility handling codes are found in Block K on the Uniform Manifest. This code will be a letter (S, T, or D), followed by 2 numbers.

Generator's EPA Identification Number: | M | A | D | 0 | 0 | 1 | 4 | 0 | 3 | 1 | 0 | 4 |

13. Comments (refer to line number): Use this space to explain any entry in (12).

1. Various oils solidified with inert solids

Note A. 29 Drums of non-hazardous material were also shipped to Chemical Waste Management, Ohio

14. Waste Reduction and On-Site Recovery by Generator (optional question):

After September 1, 1985, manifests must contain a generator certification that the volume and/or quantity and toxicity of the waste has been reduced to the maximum degree economically practicable and the method used to manage the waste minimizes risk to the extent practicable.

A. Type of activity: (Check where appropriate)

1) Treatment as an integral part of the manufacturing process (as defined in Mass. regulations, 310 CMR 30.010) _____

2) Re-use (see 310 CMR 30.355) and/or recycling by approval of the Department (see CMR 30.380) _____

3) Oil and water separation (see 310 CMR 30.202:10) _____

4) Combustion of waste as a fuel (see 310 CMR 30.356) _____

B. Amount: (estimated annual quantity)

1) Total waste entered for processing: _____ gallons

2) Total amount of recovered product: _____ gallons

C. Description of waste and process:

If you have more than one recovered or reduced material, duplicate this page for each.

PART 2

GENERATOR ANNUAL REPORT

To complete this part of the report, refer to all your manifests for the calendar year. Separate your manifests by receiving facility.

11. Generator's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

12. Waste Shipped Off-Site: (Complete a separate page for each facility to which waste was shipped. Reproduce additional pages as necessary.)

a) Name of Receiving Facility: Chemical Waste Management Inc.

b) Facility EPA ID Number: A L D 0 0 0 6 2 2 4 6 4

c) Facility Address: P. O. Box 55, Emelle Alabama 35459
(Street or P.O. Box) (City) (State)

(If the waste was exported to a foreign country, enter Waste Exported on line b. and identify the U.S. border point of departure in Comments, line 13.)

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E Receiving Facility Handling Code
1	Hazardous Waste Solid, N.O.S. (BIS-2 ethylhexyl Phthalate	U028	1430	G	D80
2	Hazardous Waste Liquid N.O.S. (waste oil)	M001	385	G	D80
3	Waste Sodium Azide Mixture	P105	55	G	D80
4	Waste Combustible Liquid N.O.S. (Polymeric Alkylated Phenol	D001	110	G	D80
5	Waste Oil, N.O.S.	M001	495	G	D80

Instructions:

A. To identify your wastes, refer to your manifests. The description will usually be the U.S. DOT shipping name. Use a separate line for each type of waste. Number lines consecutively. Duplicate page as necessary.

B. The EPA Waste Number (Block I. on the Uniform Manifest Form) can also be found in Massachusetts regulations, 310 CMR 30.120-30.136. The number will be a 4-digit code, beginning with a letter, followed by 3 numbers.

C. Enter the total amount of this particular waste which was shipped to this facility during the calendar year.

D. The unit codes are: G - gallons; P - pounds; T - tons; Y - cubic yards. If you shipped waste in 55 gal. drums, multiply number of drums by 55, enter G.

E. Receiving facility handling codes are found in Block K on the Uniform Manifest. This code will be a letter (S, T, or D), followed by 2 numbers.

Generator's EPA Identification Number: | M | A | D | 0 | 0 | 1 | 4 | 0 | 3 | 1 | 0 | 4 |

13. Comments (refer to line number): Use this space to explain any entry in (12).

Note: A. 14 Drums of non-hazardous material were also shipped to Chemical waste management, Alabama.

14. Waste Reduction and On-Site Recovery by Generator (optional question):

After September 1, 1985, manifests must contain a generator certification that the volume and/or quantity and toxicity of the waste has been reduced to the maximum degree economically practicable and the method used to manage the waste minimizes risk to the extent practicable.

A. Type of activity: (Check where appropriate)

1) Treatment as an integral part of the manufacturing process (as defined in Mass. regulations, 310 CMR 30.010) _____

2) Re-use (see 310 CMR 30.355) and/or recycling by approval of the Department (see CMR 30.380) _____

3) Oil and water separation (see 310 CMR 30.202:10) _____

4) Combustion of waste as a fuel (see 310 CMR 30.356) _____

B. Amount: (estimated annual quantity)

1) Total waste entered for processing: _____ gallons

2) Total amount of recovered product: _____ gallons

C. Description of waste and process:

If you have more than one recovered or reduced material, duplicate this page for each.

PART 2

GENERATOR ANNUAL REPORT

To complete this part of the report, refer to all your manifests for the calendar year. Separate your manifests by receiving facility.

11. Generator's EPA Identification Number: MAD001401104

12. Waste Shipped Off-Site: (Complete a separate page for each facility to which waste was shipped. Reproduce additional pages as necessary.)

a) Name of Receiving Facility: SCA Chemical Services, Inc.

b) Facility EPA ID Number: MAD053452637

c) Facility Address: 385 Quincy Ave., Braintree, MA 02184
(Street or P.O. Box) (City) (State)

(If the waste was exported to a foreign country, enter Waste Exported on line b. and identify the U.S. border point of departure in Comments, line 13.)

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E Receiving Facility Handling Code
1	Hazardous Waste Liquid N.O.S. (waste oil)	M001	715	G	S02
2	Waste combustible Liq. N.O.S. (Polymeric Alkylated Phenol	D001	210	G	S01
3	Waste Oil	M001	495	G	S01

Instructions:

A. To identify your wastes, refer to your manifests. The description will usually be the U.S. DOT shipping name. Use a separate line for each type of waste. Number lines consecutively. Duplicate page as necessary.

B. The EPA Waste Number (Block I. on the Uniform Manifest Form) can also be found in Massachusetts regulations, 310 CMR 30.120-30.136. The number will be a 4-digit code, beginning with a letter, followed by 3 numbers.

C. Enter the total amount of this particular waste which was shipped to this facility during the calendar year.

D. The unit codes are: G - gallons; P - pounds; T - tons; Y - cubic yards. If you shipped waste in 55 gal. drums, multiply number of drums by 55, enter G.

E. Receiving facility handling codes are found in Block K on the Uniform Manifest. This code will be a letter (S, T, or D), followed by 2 numbers.

Generator's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

13. Comments (refer to line number): Use this space to explain any entry in (12).

Note: A. 47 Drums of non-hazardous material were also shipped to SCA, Braintree

14. Waste Reduction and On-Site Recovery by Generator (optional question):

After September 1, 1985, manifests must contain a generator certification that the volume and/or quantity and toxicity of the waste has been reduced to the maximum degree economically practicable and the method used to manage the waste minimizes risk to the extent practicable.

A. Type of activity: (Check where appropriate)

1) Treatment as an integral part of the manufacturing process (as defined in Mass. regulations, 310 CMR 30.010) _____

2) Re-use (see 310 CMR 30.355) and/or recycling by approval of the Department (see CMR 30.380) _____

3) Oil and water separation (see 310 CMR 30.202:10) _____

4) Combustion of waste as a fuel (see 310 CMR 30.356) _____

B. Amount: (estimated annual quantity)

1) Total waste entered for processing: _____ gallons

2) Total amount of recovered product: _____ gallons

C. Description of waste and process:

If you have more than one recovered or reduced material, duplicate this page for each.

PART 2

GENERATOR ANNUAL REPORT

To complete this part of the report, refer to all your manifests for the calendar year. Separate your manifests by receiving facility.

11. Generator's EPA Identification Number: MAD001403104

12. Waste Shipped Off-Site: (Complete a separate page for each facility to which waste was shipped. Reproduce additional pages as necessary.)

a) Name of Receiving Facility: SCA Services, Inc.

b) Facility EPA ID Number: NYD049836679

c) Facility Address: 1550 Balmer Rd., Model City NY 14107
(Street or P.O. Box) (City) (State)

(If the waste was exported to a foreign country, enter Waste Exported on line b. and identify the U.S. border point of departure in Comments, line 13.)

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E Receiving Facility Handling Code
1	Waste Flammable Solid, N.O.S. (Dinitrosopenta-	D001	220	G	D80
	methylene-tetramine)				
2	Hazardous Waste Solid, N.O.S. (BIS-2 ethylhexyl	U028	385	G	D80
	Phthalate)				

Instructions:

A. To identify your wastes, refer to your manifests. The description will usually be the U.S. DOT shipping name. Use a separate line for each type of waste. Number lines consecutively. Duplicate page as necessary.

B. The EPA Waste Number (Block I. on the Uniform Manifest Form) can also be found in Massachusetts regulations, 310 CMR 30.120-30.136. The number will be a 4-digit code, beginning with a letter, followed by 3 numbers.

C. Enter the total amount of this particular waste which was shipped to this facility during the calendar year.

D. The unit codes are: G - gallons; P - pounds; T - tons; Y - cubic yards. If you shipped waste in 55 gal. drums, multiply number of drums by 55, enter G.

E. Receiving facility handling codes are found in Block K on the Uniform Manifest. This code will be a letter (S, T, or D), followed by 2 numbers.

Generator's EPA Identification Number: | M | A | D | 0 | 0 | 1 | 4 | 0 | 3 | 1 | 0 | 4 |

13. Comments (refer to line number): Use this space to explain any entry in (12).

Note: A. 48 drums of non-hazardous material were also shipped to SCA, Model City.

14. Waste Reduction and On-Site Recovery by Generator (optional question):

After September 1, 1985, manifests must contain a generator certification that the volume and/or quantity and toxicity of the waste has been reduced to the maximum degree economically practicable and the method used to manage the waste minimizes risk to the extent practicable.

A. Type of activity: (Check where appropriate)

1) Treatment as an integral part of the manufacturing process (as defined in Mass. regulations, 310 CMR 30.010) _____

2) Re-use (see 310 CMR 30.355) and/or recycling by approval of the Department (see CMR 30.380) _____

3) Oil and water separation (see 310 CMR 30.202:10) _____

4) Combustion of waste as a fuel (see 310 CMR 30.356) _____

B. Amount: (estimated annual quantity)

1) Total waste entered for processing: _____ gallons

2) Total amount of recovered product: _____ gallons

C. Description of waste and process:

If you have more than one recovered or reduced material, duplicate this page for each.

PART 2

GENERATOR ANNUAL REPORT

To complete this part of the report, refer to all your manifests for the calendar year. Separate your manifests by receiving facility.

11. Generator's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

12. Waste Shipped Off-Site: (Complete a separate page for each facility to which waste was shipped. Reproduce additional pages as necessary.)

a) Name of Receiving Facility: N/A

b) Facility EPA ID Number: N Y D 0 8 0 3 3 6 2 4 1

c) Facility Address: 56th Pine Ave., Niagara Falls, N.Y. 14302
(Street or P.O. Box) (City) (State)

(If the waste was exported to a foreign country, enter Waste Exported on line b. and identify the U.S. border point of departure in Comments, line 13.)

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E Receiving Facility Handling Code
1	Hazardous waste solid, N.O.S. (BIS-2 ethylhexyl	U028	385	G	D80
	Phthalate				
2	Hazardous waste solid, N.O.S. (waste oil)	M001	55	G	D80

Instructions:

A. To identify your wastes, refer to your manifests. The description will usually be the U.S. DOT shipping name. Use a separate line for each type of waste. Number lines consecutively. Duplicate page as necessary.

B. The EPA Waste Number (Block I. on the Uniform Manifest Form) can also be found in Massachusetts regulations, 310 CMR 30.120-30.136. The number will be a 4-digit code, beginning with a letter, followed by 3 numbers.

C. Enter the total amount of this particular waste which was shipped to this facility during the calendar year.

D. The unit codes are: G - gallons; P - pounds; T - tons; Y - cubic yards. If you shipped waste in 55 gal. drums, multiply number of drums by 55, enter G.

E. Receiving facility handling codes are found in Block K on the Uniform Manifest. This code will be a letter (S, T, or D), followed by 2 numbers.

Generator's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

13. Comments (refer to line number): Use this space to explain any entry in (12).

Note: A. 43 drums of non-hazardous material were also shipped to

2. Various oils solidified with inert solids.

14. Waste Reduction and On-Site Recovery by Generator (optional question):

After September 1, 1985, manifests must contain a generator certification that the volume and/or quantity and toxicity of the waste has been reduced to the maximum degree economically practicable and the method used to manage the waste minimizes risk to the extent practicable.

A. Type of activity: (Check where appropriate)

1) Treatment as an integral part of the manufacturing process (as defined in Mass. regulations, 310 CMR 30.010) _____

2) Re-use (see 310 CMR 30.355) and/or recycling by approval of the Department (see CMR 30.380) _____

3) Oil and water separation (see 310 CMR 30.202:10) _____

4) Combustion of waste as a fuel (see 310 CMR 30.356) _____

B. Amount: (estimated annual quantity)

1) Total waste entered for processing: _____ gallons

2) Total amount of recovered product: _____ gallons

C. Description of waste and process:

If you have more than one recovered or reduced material, duplicate this page for each.

PART 3

ANNUAL REPORT FOR WASTEWATER TREATMENT UNITS

AND FOR AUTHORIZED TREATMENT, STORAGE AND DISPOSAL FACILITIES

15. Facility's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

16. Wastewater Treatment:

A. Description of waste: N/A EPA Waste No: _____

B. Amount of waste entered for processing: N/A gallons
(Estimated annual quantity can be determined by multiplying gallons per day by number of work days in the calendar year.)

C. Description of processing: N/A Handling Code: _____
(Handling Codes can be found on the last page of the report.)

17. Waste Treated, Stored (over 90 days), or Disposed on-site of generation:

Instructions for completing columns A - E below are found in Part 2, line 12.

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E On-Site Handling Code (see last page)
1	Hazardous Waste Solid N.O.S.	M001	165	G	S01
	(waste oil)				
2	Hazardous Waste solid N.O.S.	U028	2200	G	S01
	(Bis-2 ethylhexyl Phthalate)				
3	Hazardous waste liquid N.O.S.	M001	1100	G	S01
	(waste oil)				

18. Most Recent Closure Cost Estimate: 84,013

19. Most Recent Post-Closure Cost Estimate: N/A

20. Summary of Incidents When the Contingency Plan Was Implemented:
N/A

21. Comments (refer to question and line number):

PART 3

ANNUAL REPORT FOR WASTEWATER TREATMENT UNITS

AND FOR AUTHORIZED TREATMENT, STORAGE AND DISPOSAL FACILITIES

15. Facility's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

16. Wastewater Treatment:

A. Description of waste: N/A EPA Waste No: _____

B. Amount of waste entered for processing: N/A gallons
(Estimated annual quantity can be determined by multiplying gallons per day by number of work days in the calendar year.)

C. Description of processing: N/A Handling Code: _____
(Handling Codes can be found on the last page of the report.)

17. Waste Treated, Stored (over 90 days), or Disposed on-site of generation:

Instructions for completing columns A - E below are found in Part 2, line 12.

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E On-Site Handling Code (see last page)
4	Waste Sodium Azide Mixture	P105	55	G	S01
5	Waste Combustible Liquid N.O.S.	D001	320	G	S01
	(Polymeric Alkylated Phenol)				
6	Waste oil, N.O.S.	M001	1045	G	S01

18. Most Recent Closure Cost Estimate: 84,013

19. Most Recent Post-Closure Cost Estimate: N/A

20. Summary of Incidents When the Contingency Plan Was Implemented:
N/A

21. Comments (refer to question and line number):

PART 3

ANNUAL REPORT FOR WASTEWATER TREATMENT UNITS

AND FOR AUTHORIZED TREATMENT, STORAGE AND DISPOSAL FACILITIES

15. Facility's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

16. Wastewater Treatment:

A. Description of waste: N/A EPA Waste No: _____

B. Amount of waste entered for processing: N/A gallons
(Estimated annual quantity can be determined by multiplying gallons per day by number of work days in the calendar year.)

C. Description of processing: N/A Handling Code: _____
(Handling Codes can be found on the last page of the report.)

17. Waste Treated, Stored (over 90 days), or Disposed on-site of generation:

Instructions for completing columns A - E below are found in Part 2, line 12.

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E On-Site Handling Code (see last page)
7	Waste Flammable Solid, N.O.S.	D001	220	G	S01
	(Dinitrosopenta-methylenetetramine)				
8	Hazardous Waste Liquid N.O.S.	U028	440	G	S01
	(Bis-2 ethylhexyl (phthalate)				

18. Most Recent Closure Cost Estimate: 84,013

19. Most Recent Post-Closure Cost Estimate: N/A

20. Summary of Incidents When the Contingency Plan Was Implemented:
N/A

21. Comments (refer to question and line number):

PART 3

ANNUAL REPORT FOR WASTEWATER TREATMENT UNITS

AND FOR AUTHORIZED TREATMENT, STORAGE AND DISPOSAL FACILITIES

15. Facility's EPA Identification Number: M A D 0 0 1 4 0 3 1 0 4

16. Wastewater Treatment:

A. Description of waste: N/A EPA Waste No: _____

B. Amount of waste entered for processing: N/A gallons
(Estimated annual quantity can be determined by multiplying gallons per day by number of work days in the calendar year.)

C. Description of processing: N/A Handling Code: _____
(Handling Codes can be found on the last page of the report.)

17. Waste Treated, Stored (over 90 days), or Disposed on-site of generation:

Instructions for completing columns A - E below are found in Part 2, line 12.

Line Number	A Description of Waste	B EPA Waste Number	C Quantity of Waste	D Unit Code (G,P,T,Y)	E On-Site Handling Code (see last page)
9	Waste Hydrochloric Acid	D002	138	T	S02
10	Hazardous waste Solid, N.O.S.	M001	165	G	S01
	(waste oil with inert solids)				

18. Most Recent Closure Cost Estimate: 84,013

19. Most Recent Post-Closure Cost Estimate: N/A

20. Summary of Incidents When the Contingency Plan Was Implemented:

N/A

21. Comments (refer to question and line number):

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

RECEIVED
JUL 2 . 1984
J. W. O'GRADY

July 20, 1984

Mr. Thomas C. McMahon, Director
Division of Water Pollution Control
The Commonwelath of Massachusetts
1 Winter Street
Boston, MA 02108

RE: Olin Corporation
Wilmington, Massachusetts
Interceptor Well Systems Status Report

Dear Mr. McMahon:

Pursuant to your request dated June 26, 1984, this letter serves as a status report on the interceptor well system as modified. Appendix A contains certified engineering drawings of the system as installed in November, 1983. Appendix B contains groundwater drawdown and isopleths showing operations of the system as installed. Appendix C is a design and data sheet on a Waukesha SP-25® peristaltic type pump that has been field tested at the plant since June 21, 1984.

The attachments show the system as installed has provided the necessary drawdown to intercept and remove the organics located within the area. The systems effectiveness has been adversely affected by continuing problems with fines causing the submersible pumps to become plugged. Various modifications/actions have been taken in order to alleviate this pluggage problem. These include purchasing of an alternative type submersible pump with a screen, redeveloping of IW-8, and raising the pumps off the bottom of the wells. None of these actions however, have totally eliminated the pluggage problems. In June, 1984 after conducting an extensive literature search, we began field testing of a Waukesha SP-25® peristaltic type pump. This pump was selected because of its ability to supply a good flow rate without mechanical contact with the material being pumped. This will alleviate the problems with fines and the extensive maintenance time required on the submersible pumps.

Field testing of this pump has shown that is has the ability to drawdown well IW-8 below 69 feet MSL, and IW-9 below 72 feet MSL. These wells were selected because IW-8 has historically shown the greatest volume of fine material, and IW-9 has routinely had high groundwater levels. Utilization of these pumps will allow continued pumpdown of the interceptor wells and eliminate the erratic operation previously experienced. Initially, these pumps will be installed in interceptor wells #6, 7, 8, and 9. It is estimated that these pumps will be operational by August 31, 1984.

Therefore upon installation of these new pumps, we expect to be able to establish the necessary drawdown on a continuous basis. The data in Appendix B shows that the current system has been able to achieve drawdown. This new system, with greater mechanical reliability, should enhance operation of the system to provide for the continued recovery of the organics within the affected area and elimination of seepage along the east ditch.

Should you have any questions concerning installation and/ or operation of the interceptor well system, please do not hesitate to contact Mr. Jack W. O'Grady at (615)336-4541 or Mr. James F. Martucci at (617)933-4240.

Sincerely,

OLIN CORPORATION

Ronald J. McBrien

Ronald J. McBrien
Plant Manager

Attachments
RJM/JWO/rlg

APPENDIX A

CERTIFIED DRAWINGS INTERCEPTOR WELL SYSTEM

D-C122-100	Interceptor well system for Plant B Tank Farm - Proc's flow, Sheet 1
D-C122-100	Interceptor well system for Plant B Tank Farm - Proc's flow, Sheet 2
D-C122-200	Interceptor well system equipment Layout site plan

INTERCEPTOR WELL SYSTEM STATUS

Drawing No. D-C122-200 in Appendix A shows the interceptor well and monitoring well locations included in this report. Wells IW-6, 7, 8, and 9 were installed during November, 1983. Existing monitoring well 2-A has been renumbered IW-5, and has been pumped periodically. Monitoring wells JO-4 and JO-5 have been changed to JOD and JOE. Additionally, since the modified system was installed in November, 1983, an additional monitoring well JOF has been installed between JOD and JOE.

Figure 1 shows a conceptual drawing for operation of the interceptor well system. The pumping wells are utilized to lower the groundwater table beneath the site, thereby gathering contaminated groundwater and reversing the groundwater gradient to the adjoining ditch. With continued pumping, a cone of depressio will form around the pumps large enough to encompass the ditch. When this occurs, the water in the drainage ditch will be flowing towards the interceptor wells and seepage to the ditch will cease. The organics which float on top of the water will gather in the center of the cones of depression where the wells will in turn intercept material for recovery. Ideally, the contours of the water table should look like those as shown in Figure 4, over that of the natural groundwater table shown in Figure 2. A recent ground water table plot is shown in Figure 3. This plot shows the cone of depression encompassing the entire area and intercepting all groundwater flowing beneath the storage tanks, but not extending out to the drainage ditch. One reason for this is the time necessary to develop a good cone of depression. Considerable volumes of water exist beneath the plant site and the soil has a high permeability. These two factors will require several months of pumping before a sufficient cone of depression can be formed. Consistent pumpage is where problems in the field have interferred with full development of the cone of depression.

Tables I through IV contain water level measurement data taken since December 19, 1983 for interceptor wells 6 through 9. As shown on these tables, the wells have had the following average readings:

IW-6	71.9 ft. MSL
IW-7	72.3 ft. MSL
IW-8	75.1 ft. MSL
IW-9	77.5 ft. MSL

A comparison of these values to background readings in monitoring wells GW-13 and 14, which averaged 79.0 feet MSL, show that on the average the interceptor well system has dropped the groundwater table 4.7 feet. The level of water in the ditch is usually a consistent 77.5 feet MSL. The monitoring wells located along the bank (JOD, JOF and JOE) have approached and

occassionally have been below this level (see Figure 5). However, we have not been able to consistently maintain a level below the creek (and eliminate the seepage) due to pumpage problems. We believe the new peristaltic pumps will allow us to fully develop the cone of depression.

Although each interceptor well has experienced some groundwater level fluctuations, IW-8 and IW-9 have had historically higher groundwater elevations. IW-8 has experienced problems with fines and as well as high levels of iron formation on the impellers (analysis of the material found of the impellers on 5/8/84 showed 6.7% iron present, the other material on the impellers appeared to be clay/silt. To a lesser degree, this iron formation has also occured in IW-6 and IW-7). IW-9's main pumpdown problem seems to be that it is receiving a greater groundwater volume than that found in the other wells and more than the submersible pump can handle. Due to the problems experienced with submersible pumps at the plant site, a heavy duty above ground peristaltic pump was field tested at the plant commencing June 21, 1984. This pump (see Appendix D) was able to pump IW-8 down to 68.6 feet MSL and IW-9 down to 74.7 feet MSL. This pump demonstrated the ability to alleviate all problems experienced with the interceptor well system to date. Those being:

1) Can pump solids or pump dry without clogging or overheating.

2) Does not require priming.

3) No contact, other than with an easibly replaceable hose, with material being pumped.

4) Above ground location provides easy access and observation as well as maintenance.

One of these pumps will be installed in each interceptor wells IW-6, 7, 8 and 9. These pumps have shown the ability to provide the necessary drawdown as well as provide the necessary consistency in order for a proper cone of depression to form within the operating area. This should occur within one to two months of installation. These pumps should be operational on or about August 31, 1984.

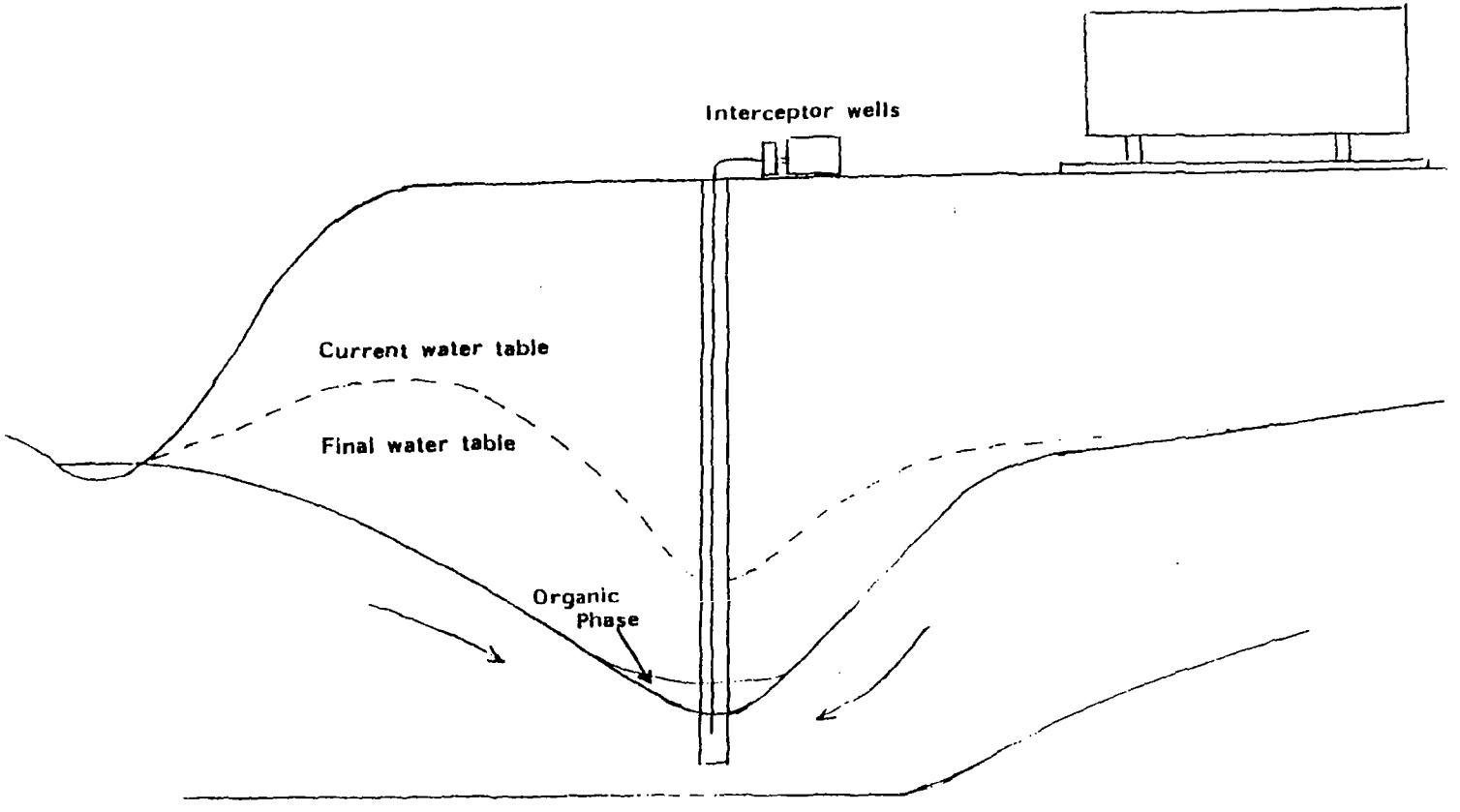


Figure 1: Concept On How Interceptor System Is Planned.

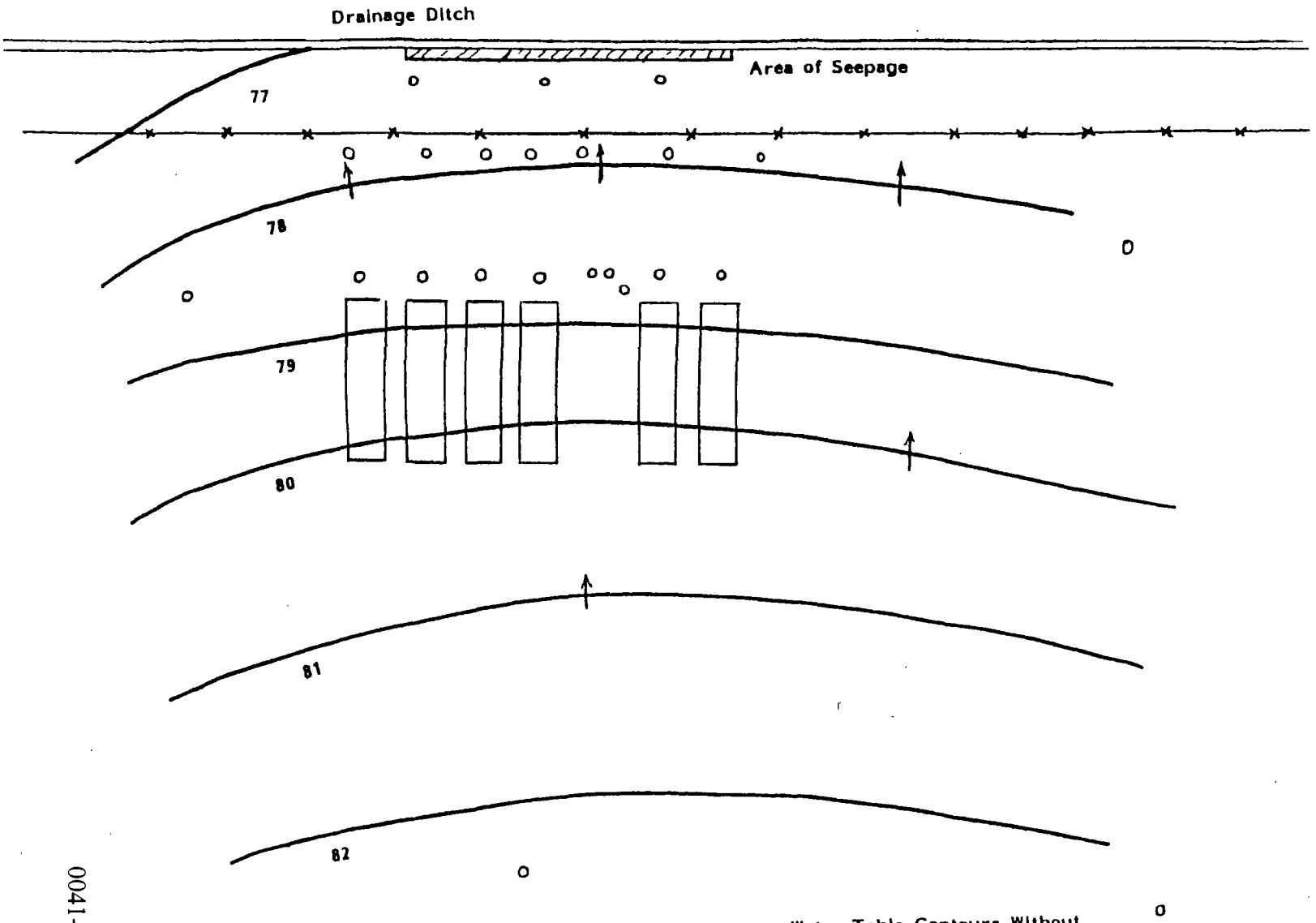


Figure 2 : Water Table Contours Without Pumpage

May 17, 1984

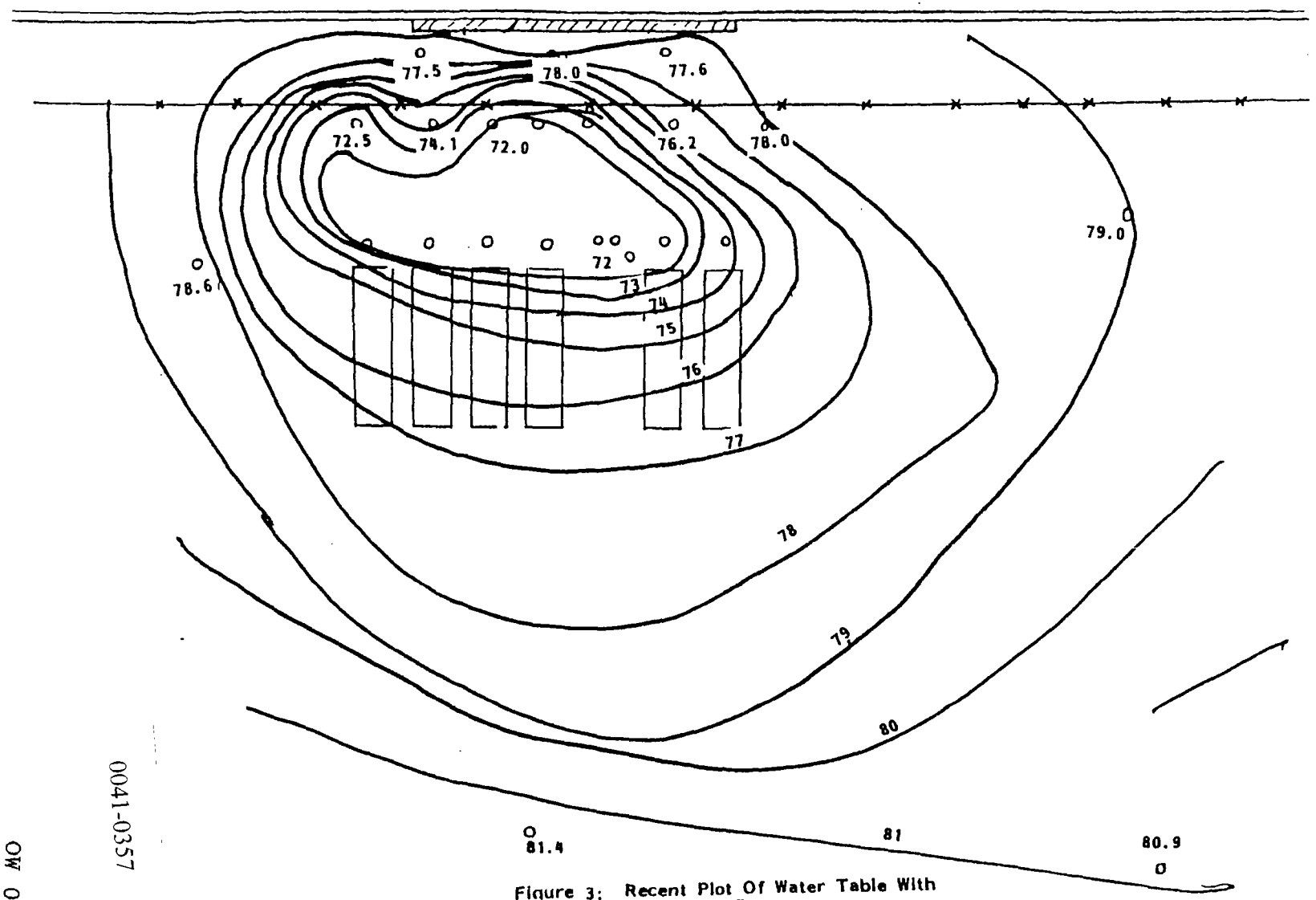


Figure 3: Recent Plot Of Water Table With Consistant Pumpage

0041-0357

OW 004744

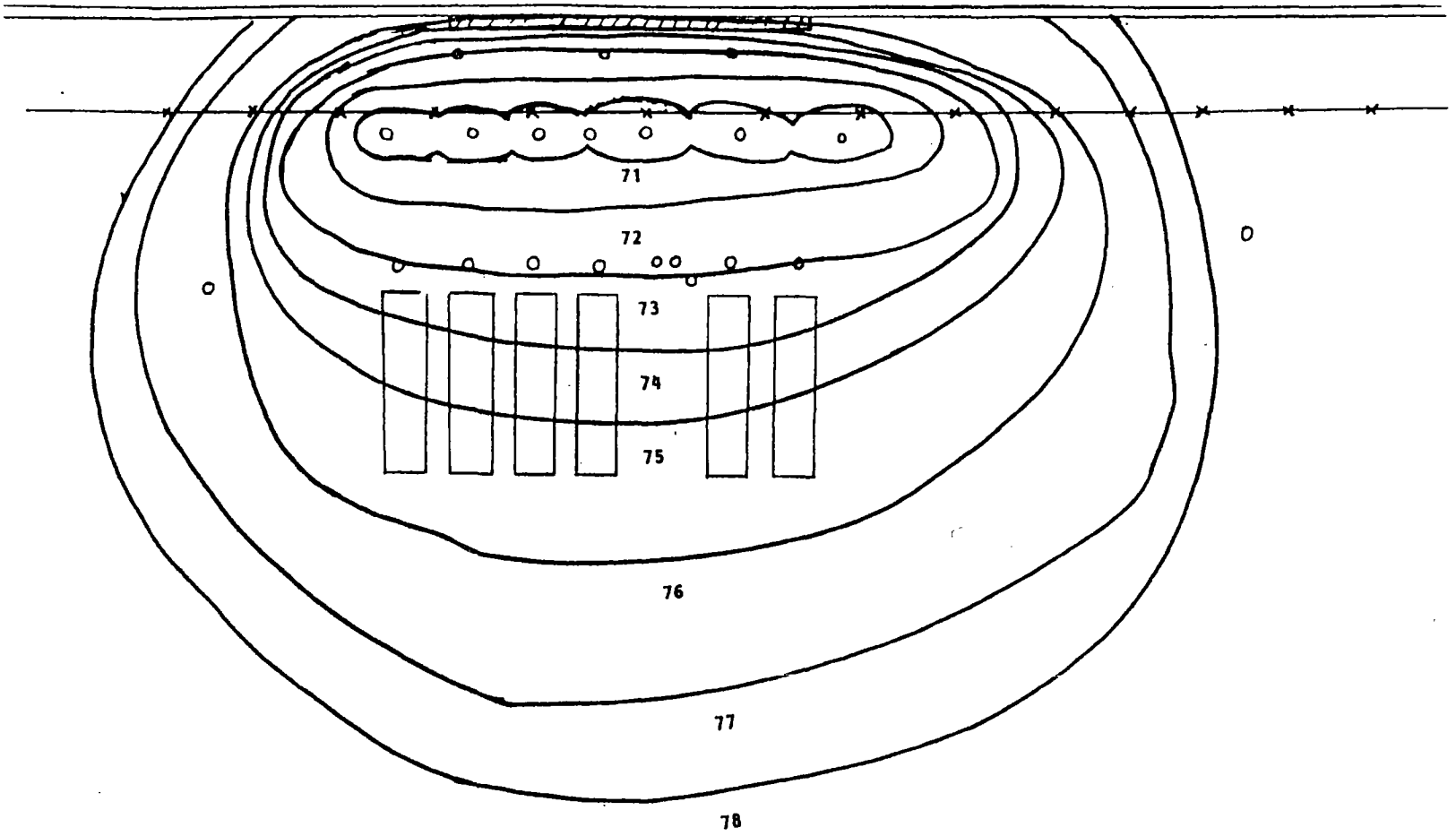


Figure 4 : Idealized Contour Plot of Water Table When All Interceptor Wells Are Pumping

0041-0358

OW 004745

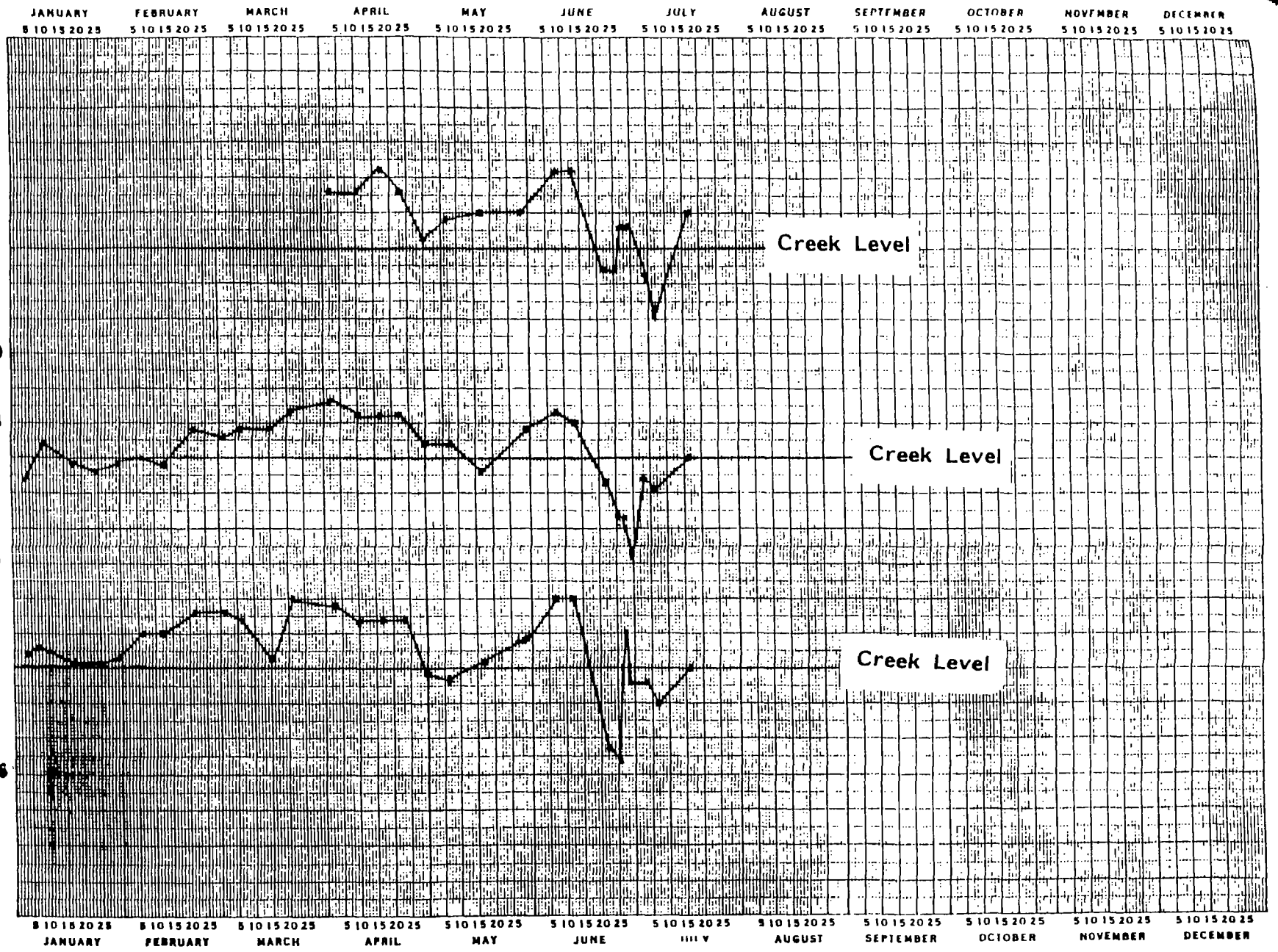


Figure 5: Weekly Plot Of Water Levels Of Monitoring Wells Along The Bank Showing Trend Towards Lower Levels

OW 004746

0041-0359

TABLE I
WELL IW-6 GROUNDWATER ELEVATIONS
PIPE TOP ELEVATION
89.03 ft. MSL

Date	Ft. MSL
12/19/83	71.5
12/28/83	70.0
1/04/84	69.5
1/09/84	70.0
1/17/84	Not measured
1/24/84	69.7
1/30/84	69.5
2/06/84	69.7
2/13/84	69.5
2/21/84	69.5
3/01/84	69.5
3/06/84	69.7
3/15/84	69.8
3/21/84	69.5
4/02/84	76.8
4/10/84	77.3
4/17/84	77.2
4/23/84	78.4
4/30/84	73.7
5/07/84	72.5
5/17/84	72.5
5/29/84	71.9
6/08/84	72.4
6/12/84	74.3
Average	71.9

TABLE II
WELL IW-8 GROUNDWATER ELEVATIONS
PIPE TOP ELEVATION
90.17 ft. MSL

Date	Ft. MSL
12/19/83	71.0
12/28/83	71.2
1/04/84	72.7
1/09/84	78.0
1/17/84	Pump inhibiting measurement
1/24/84	Pump inhibiting measurement
1/30/84	70.2
2/06/84	70.2
2/13/84	71.6
2/21/84	72.5
3/01/84	71.0
3/06/84	72.2
3/15/84	72.2
3/21/84	73.0
4/02/84	75.6
4/10/84	70.5
4/17/84	69.4
4/23/84	70.3
4/30/84	71.4
5/07/84	71.1
5/17/84	74.7
5/29/84	74.2
6/08/84	74.3
6/12/84	73.5
Average	72.3

TABLE III
WELL IW-8 GROUNDWATER ELEVATIONS
PIPE TOP ELEVATION
89.97 Ft. MSL

Date	Ft. MSL
12/19/83	78.1
12/28/83	76.7
1/04/84	77.8
1/09/84	77.5
1/17/84	Well down for redevelopment
1/24/84	Well down for redevelopment
1/30/84	77.6
2/06/84	73.6
3/13/84	72.3
2/21/84	72.5
3/01/84	73.5
3/06/84	75.4
3/15/84	68.2
3/21/84	74.8
4/02/84	78.6
4/10/84	70.7
4/17/84	73.9
4/23/84	72.0
4/30/84	77.2
5/07/84	77.3
5/17/84	72.0
5/29/84	76.8
6/08/84	77.0
6/12/84	78.0
Average	75.1

0041-0362

OW 004749

TABLE IV
WELL IW-9 GROUNDWATER ELEVATIONS
PIPE TOP ELEVATION
89.77 Ft. MSL

Date		Ft. MSL
12/19/83		76.3
12/28/83		78.2
1/04/84		76.3
1/19/84		76.6
1/17/84		79.9
1/24/84		77.2
1/30/84		77.5
2/06/84		77.7
2/13/84		78.0
2/21/84		78.5
3/01/84		78.6
3/06/84		78.3
3/15/84		78.7
3/21/84		78.6
4/02/84		78.6
4/10/84		78.4
4/17/84		78.4
4/23/84		78.4
4/30/84		70.5
5/07/84		75.7
5/17/84		76.2
5/29/84		76.8
6/08/84		78.6
6/12/84		78.6
	Average	77.5

0041-0363

JWO/wsr
09/7/19/84

OW 004750

APPENDIX C

WAUKESHA SP/25® PUMP

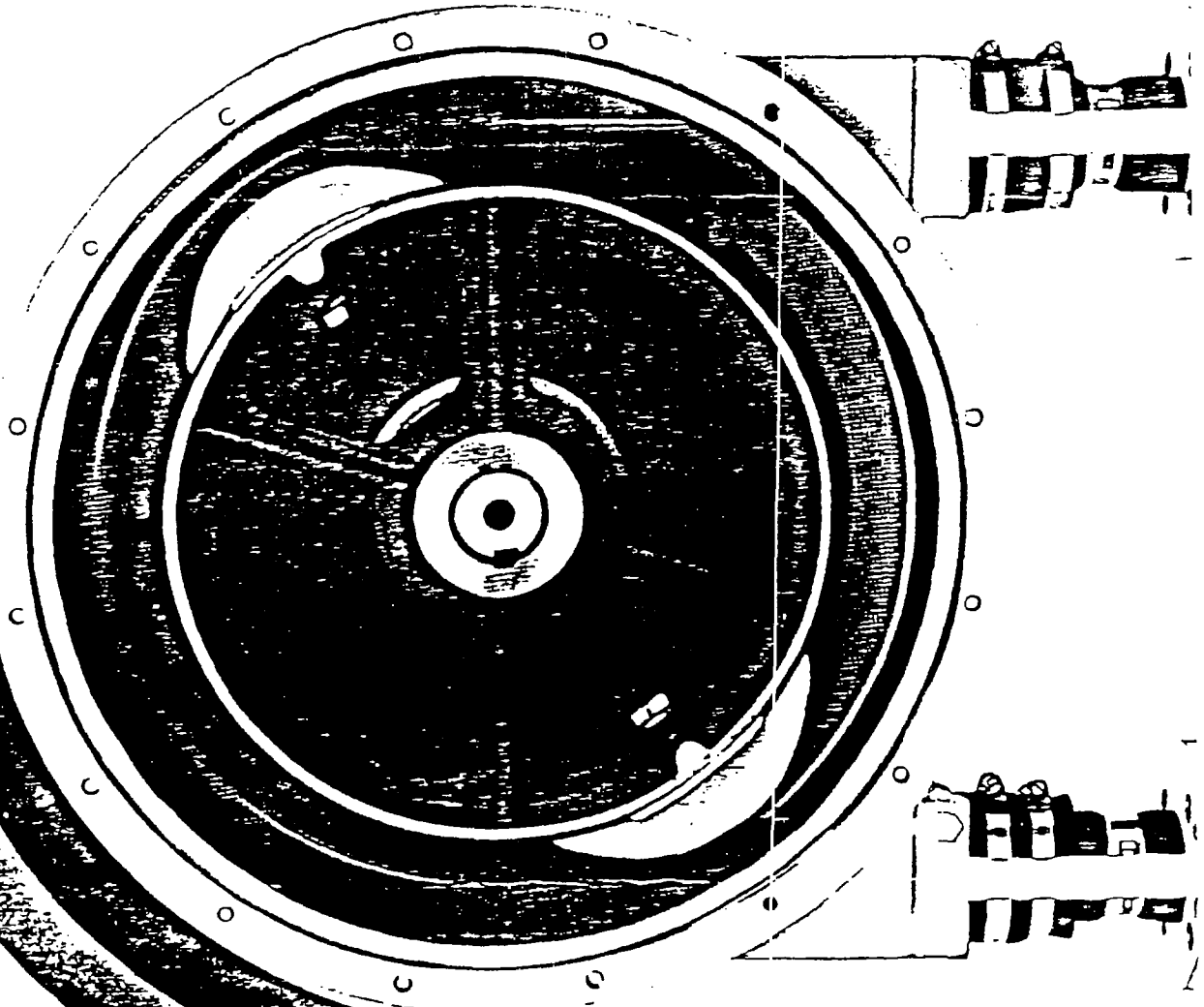
PERISTALTIC TYPE

HOSEPUMP

A NEW PUMP ALTERNATIVE FOR TOUGH APPLICATIONS

. . . including abrasive slurries

. . . shear-sensitive fluids



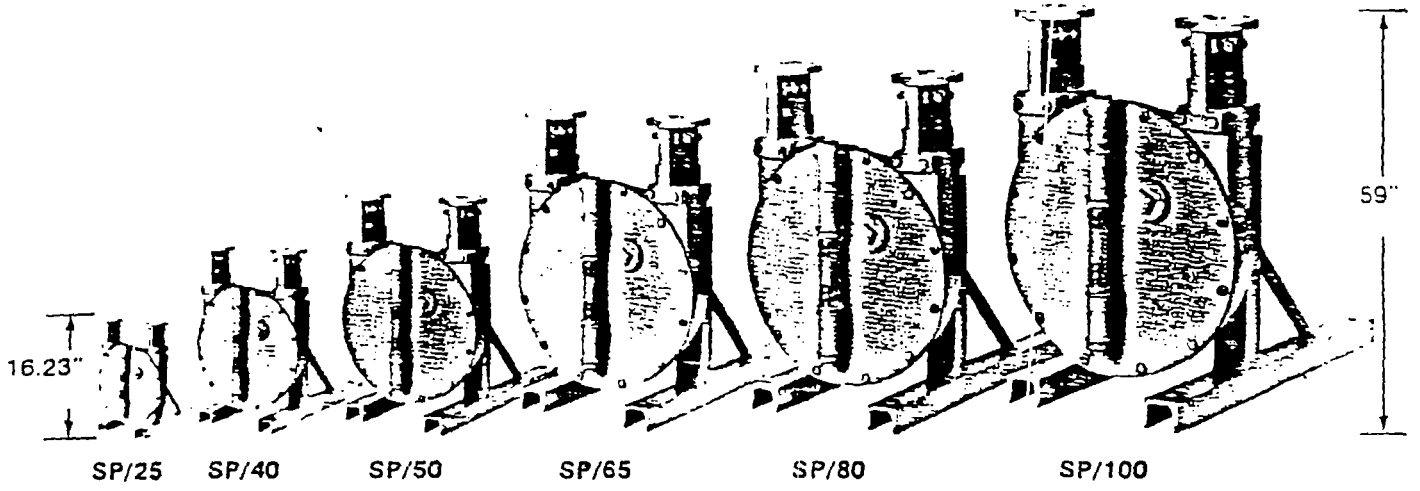
- HIGH CAPACITIES
- NO PRODUCT SEALS
- SELF-PRIMING
- HIGH PRESSURES

0041-0365

Distributed In North & South America Exclusively By – **WAUKESHA**

OW 004752

AVAILABLE IN SIX SIZES



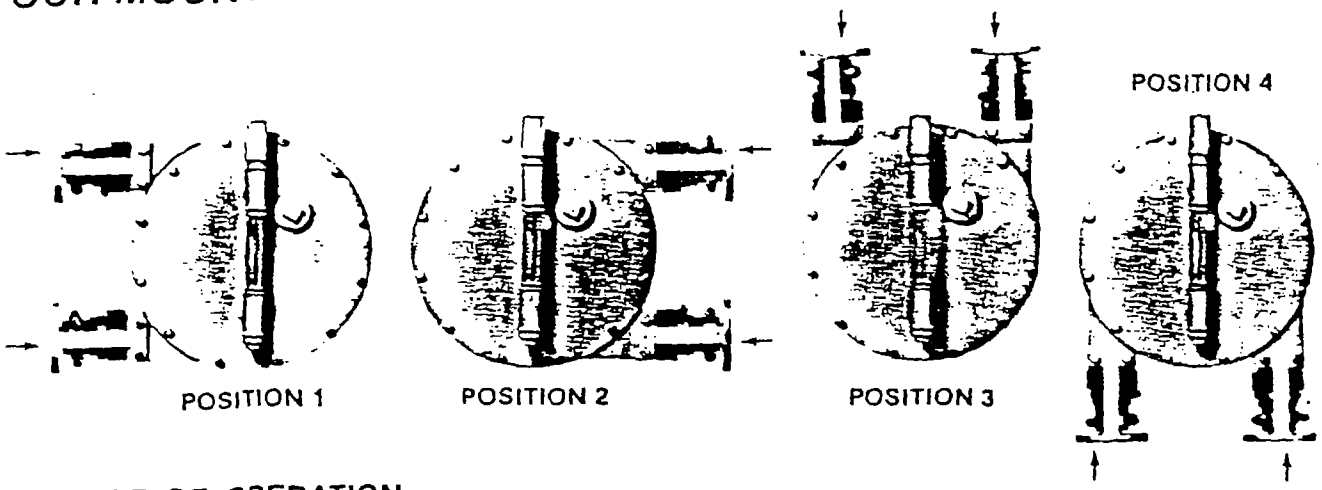
COMPARE THESE FEATURES AGAINST THE PUMP YOU ARE NOW USING:

- Handles abrasive slurries & corrosive acids with minimum wear
- No product seals in contact with material being pumped
- Smooth liquid passage without valves, dead corners or glands to impede flow or cleaning
- High pressure performance to 220 PSIG
- Six pump sizes with flow characteristics of 1 through 330 GPM . . . 1" through 4" I.D. hose sizes
- *Completely self-priming (28 to 30 ft. lift)*
- Runs dry without detrimental effect . . . can function as vacuum pump
- High volumetric efficiency with metering capability . . . output flow is directly proportional to speed at either low or high discharge pressure conditions — including high viscosity slurries
- Low noise level operation — rotating part runs in sealed lubricant bath
- Assembly and servicing with simple tools — with no critical clearance adjustments . . . easy hose *replacement*

PARTIAL LIST OF HOSEPUMP APPLICATIONS

Silicone	Corrosive chemicals & acids	Crystal slurries
Highly abrasive filter coatings	Printing inks	Waste water sludges
Metallic-filled explosives paste	Ore concentrates	Paper slurries
High-solids clay in water	Ceramic slip	Tape oxides
Glue & adhesives	Caulking compounds	Lapping compounds
Shear-sensitive latex suspension emulsions	Potato waste	Drillers mud
Resins with abrasive fillers	Lime & cement mortar	Stringy material in fluids

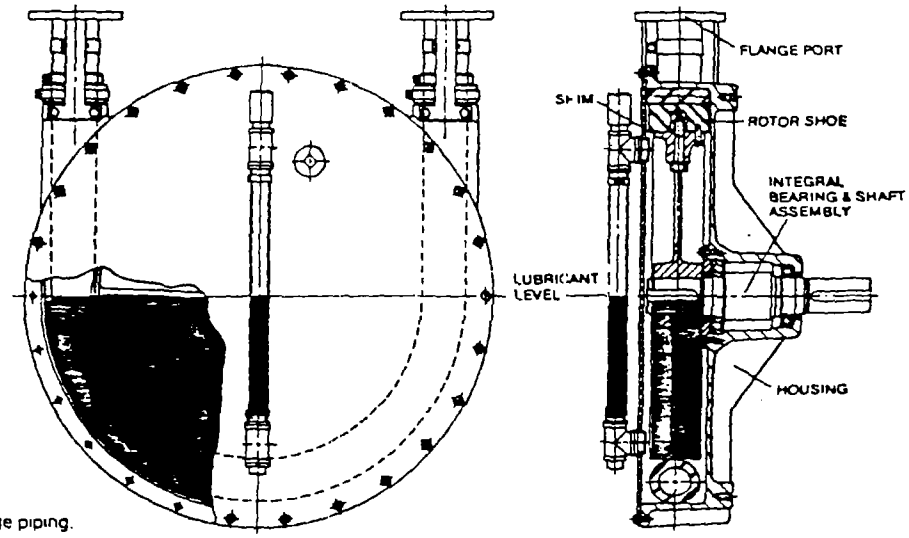
FOUR MOUNTING POSITIONS — CHOICE OF ROTATION



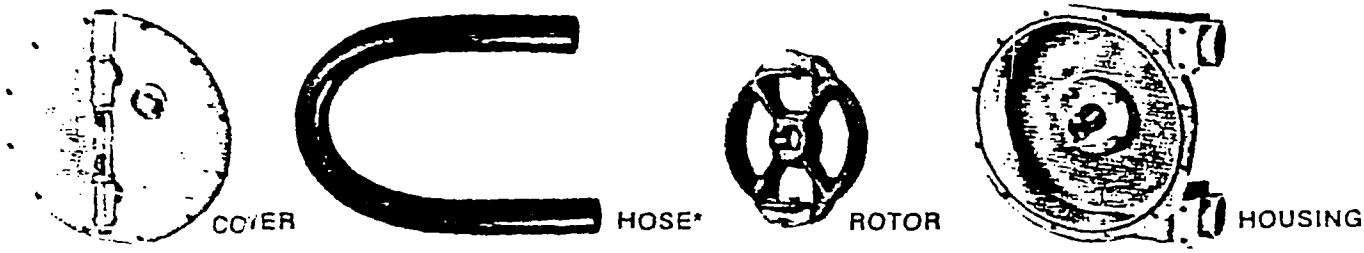
PRINCIPLE OF OPERATION

The pumping action of the Hosepump results from alternately compressing and relaxing* the specially designed resilient hose. These front and side view illustrations show how the patented steel reinforced hose is compressed between the inner wall of the housing and the compression shoes on the rotor. A liquid lubricant in the housing minimizes sliding friction. The fluid being pumped is in contact only with the inner wall of the hose. During compression, abrasive particles in the fluid are cushioned in the thick inner hose wall — returning to the fluid stream after compression. The pump has no seals or valves.

* The resultant pulsating flow, if undesirable, may be minimized with an accumulator in the discharge piping.



WAUKESHA/Bredel HOSEPUMP COMPONENTS



*The patented hose is made of a specially developed thickwall elastomer rubber, reinforced with nylon cord.

Available materials are:
* Natural rubber
* Buna NBR.

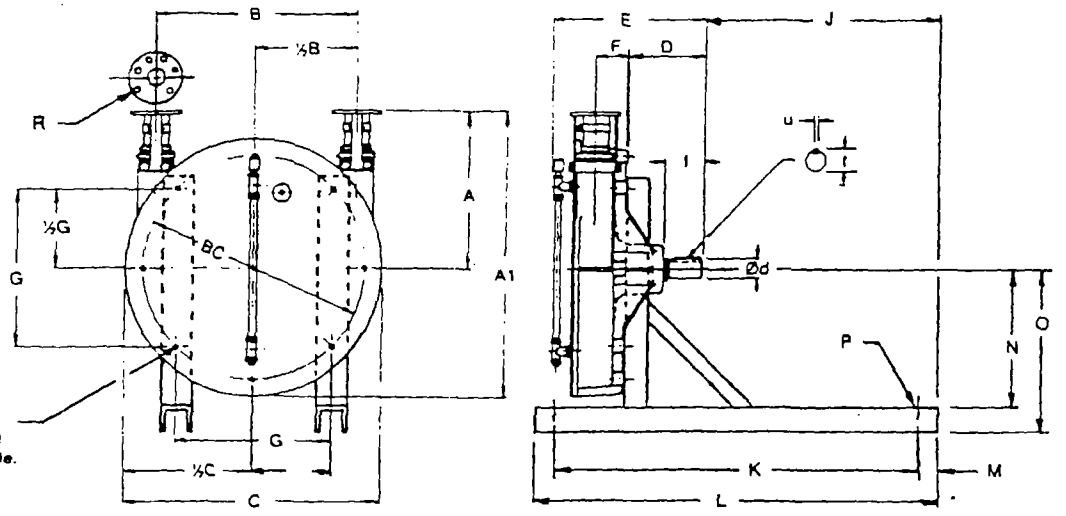
Hose life ranges from 1,000 - 5,000 working hours, depending upon speed and pressures. A chemical compatibility table for the two hose types is included in this catalog.

0041-0367

OW 004754

DIMENSIONS

MODEL	DISP /REV	R SIZE	R ASA	WT LBS
SP/25	.088 G .333 L	1	150	165
SP/40	.35 G 1.33 L	1 1/2	150	346
SP/50	.76 G 2.88 L	2	150	536
SP/65	1.75 G 6.62 L	2 1/2	150	973
SP/80	3.06 G 11.6 L	3	150	1516
SP/100	5.25 G 19.9 L	4	150	1800

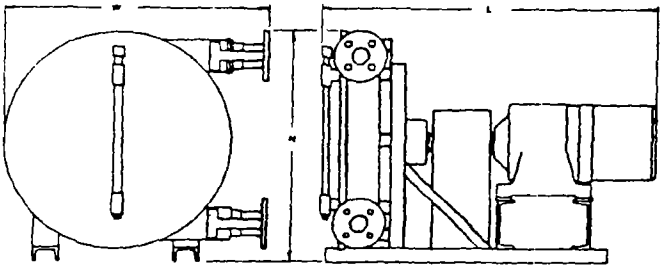


n x H (Tap)
Equally spaced
on BC bolt circle.

MODEL	DIM	A	A1	B	C	D	F	G	H	nxT	J	K	L	M	N	O	P	d	I	u	t
SP/25	inch	12 1/16	19 5/16	10-13/32	14-21/32	4 27/32	2 23/32	8-21/32	10-5/8	4xM10	13-1/16	21 21/32	23-5/8	1	7 3/8	8-7/8	9/16	1 182	2 3/8	315	1 300
	mm	307	490	264	372	123	68	220	270		332	550	600	25	187	225	14	30	60	8	33
SP/40	inch	15-3/4	27 1/8	16-15/16	22 7/8	6 27/32	3 3/8	13-13/32	16-1/2	8xM12	15 25/32	27 9/16	29 17-32	1	11 1/32	12 25/32	23/32	1 576	3 1/64	472	1 694
	mm	400	689	430	580	174	85	340	419		401	700	750	25	280	325	18	40	80	12	43
SP/50	inch	19 1/16	33-1/4	21 7/8	28 3/8	8-25/32	4 1/32	17 11/32	20-7/16	8xM12	19-5/8	34 1/4	36 7/32	1	13-31/32	15 3/4	23/32	1 97	3 15/16	552	2 108
	mm	484	845	555	720	223	102	440	519		492	870	920	25	356	400	18	50	100	14	53.5
SP/65	inch	25 1/2	43-15/16	29-13/32	37 7/16	10-29/32	4 27/32	22 27/32	26 3/4	8xM16	25 5/16	43 5/16	45 9/32	1	18 11/16	20 21/32	23/32	2 758	5 1/8	788	2 935
	mm	648	1116	746	950	277	123	580	679		643	1100	1150	25	475	525	18	70	130	20	74.5
SP/80	inch	28-1/16	49 11/16	34 1/2	43 17/32	11 3/4	4 19/32	22-7/16	24 13/16	8xM20	26 21/32	43 9/32	49-7/32	2	22 1/16	27 9/16	7/8	3 152	5 29/32	867	3 349
	mm	713	1262	876	1105	298	142	570	570		677	1150	1250	50	560	700	22	80	150	22	85
SP/100	inch	32 11/16	58 3/16	41 1/32	51 7/32	15 11/16	6 27/32	26 3/4	26 3/4	8xM24	33 17/32	58-1/16	62	2	25-3/16	32 9/32	1 1/32	3 94	7 7/8	1 103	4 176
	mm	830	1478	1042	1300	398	174	679	679		852	1475	1575	50	640	820	28	100	200	28	106

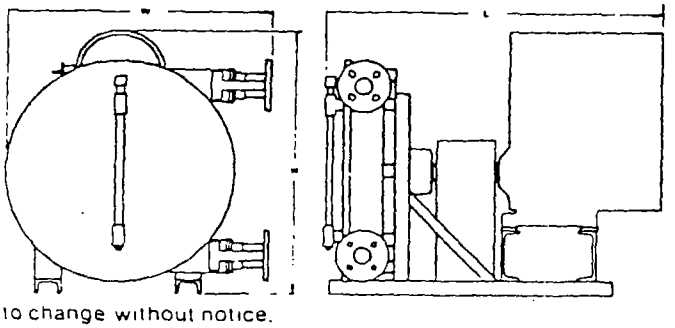
TYPICAL DRIVE ARRANGEMENTS

FIXED SPEED UNITS



MODEL	INCHES / MILLIMETERS	L	W	H
SP/25	inch	37-1/2	19-1/2	16-5/16
	mm	952.5	495	414.3
SP/40	inch	45-1/8	28	24-1/4
	mm	1148	710	615
SP/50	inch	40-7/8	33-7/16	29-7/8
	mm	1546	850	760
SP/65	inch	61-7/8	42-5/16	39
	mm	1571	1075	990
SP/80	inch	73-7/8	50	48-3/4
	mm	1876	1270	1238
SP/100	inch	85-7/8	58-11/16	57-3/16
	mm	2181	1490	1452

VARIABLE SPEED UNITS



MODEL	INCHES / MILLIMETERS	L	W	H
SP/25	inch	39-5/8	19-1/2	23-5/16
	mm	1006	495	592
SP/40	inch	51-5/16	28	32-1/16
	mm	1303	710	814
SP/50	inch	64-3/4	33-7/16	40-3/16
	mm	1644	850	1021
SP/65	inch	73-1/2	42 5/16	51-1/2
	mm	1868	1075	1308
SP/80	inch	84-3/8	50	57-1/16
	mm	2143	1270	1449
SP/100	inch	90-1/4	58 11/16	61-3/4
	mm	2293	1490	1570

Dimensions subject to change without notice.

0041-0368

OW 004755

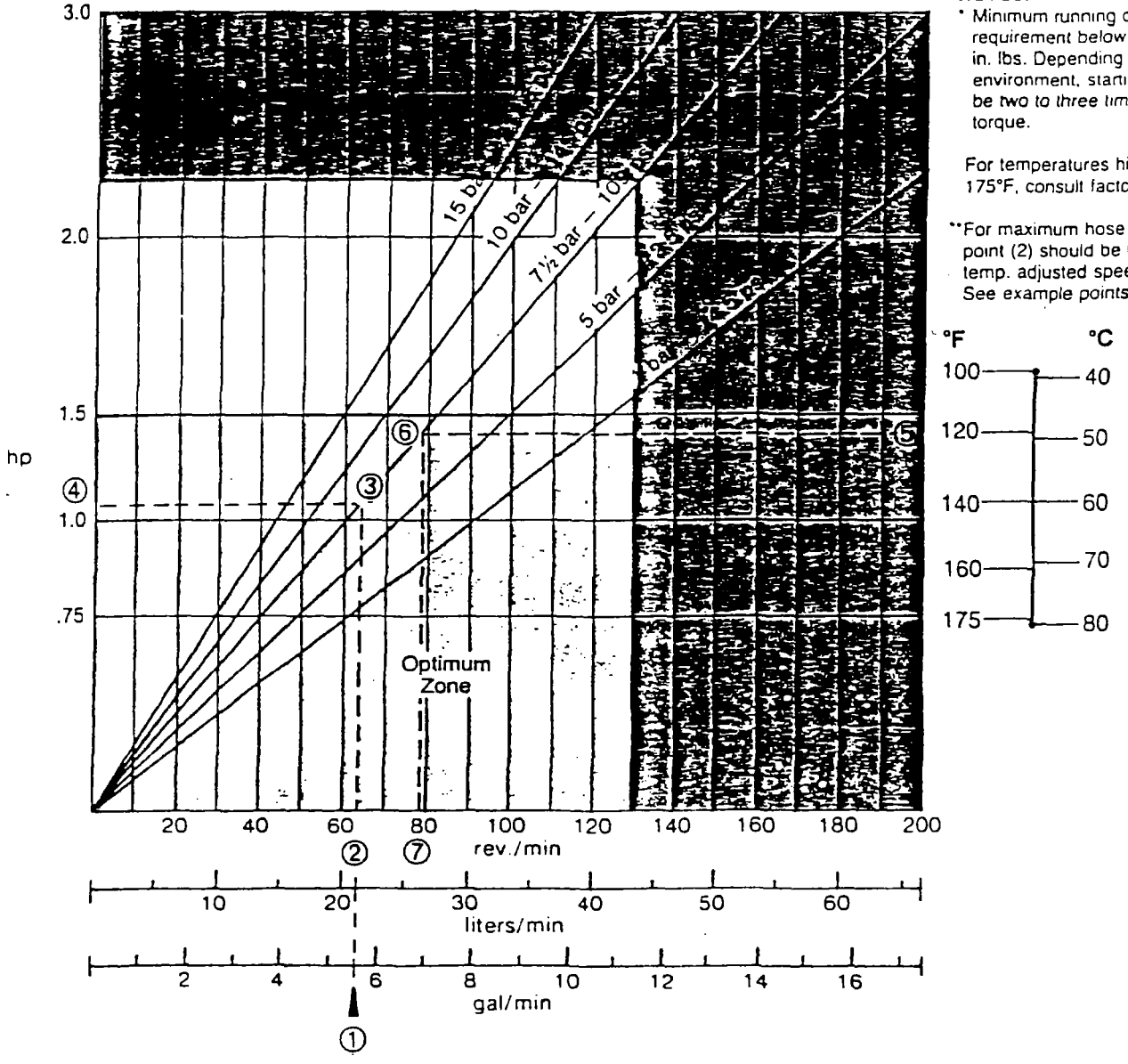
PERFORMANCE CHART

How To Calculate Speed/Horsepower

① Flow Required
② Required Speed
③ Calculated Pressure
④ Horsepower Required
⑤ Fluid Temperature.
⑥ Calculated Pressure
⑦ Max. Recommended R.P.M.**

TYPE SP/25

PORTS ASA - 150# 1" Displacement per rev. .088 gal./.333 liter
PUMPHOSE INNER DIAMETER .985 Inch (25mm)



NOTES:

* Minimum running drive torque requirement below this hp is 700 in. lbs. Depending on operating environment, starting torque can be two to three times running torque.

For temperatures higher than 175°F, consult factory.

**For maximum hose life, speed point (2) should be lower than temp. adjusted speed point (7). See example points (1) thru (7).

0041-0369

OW 004756

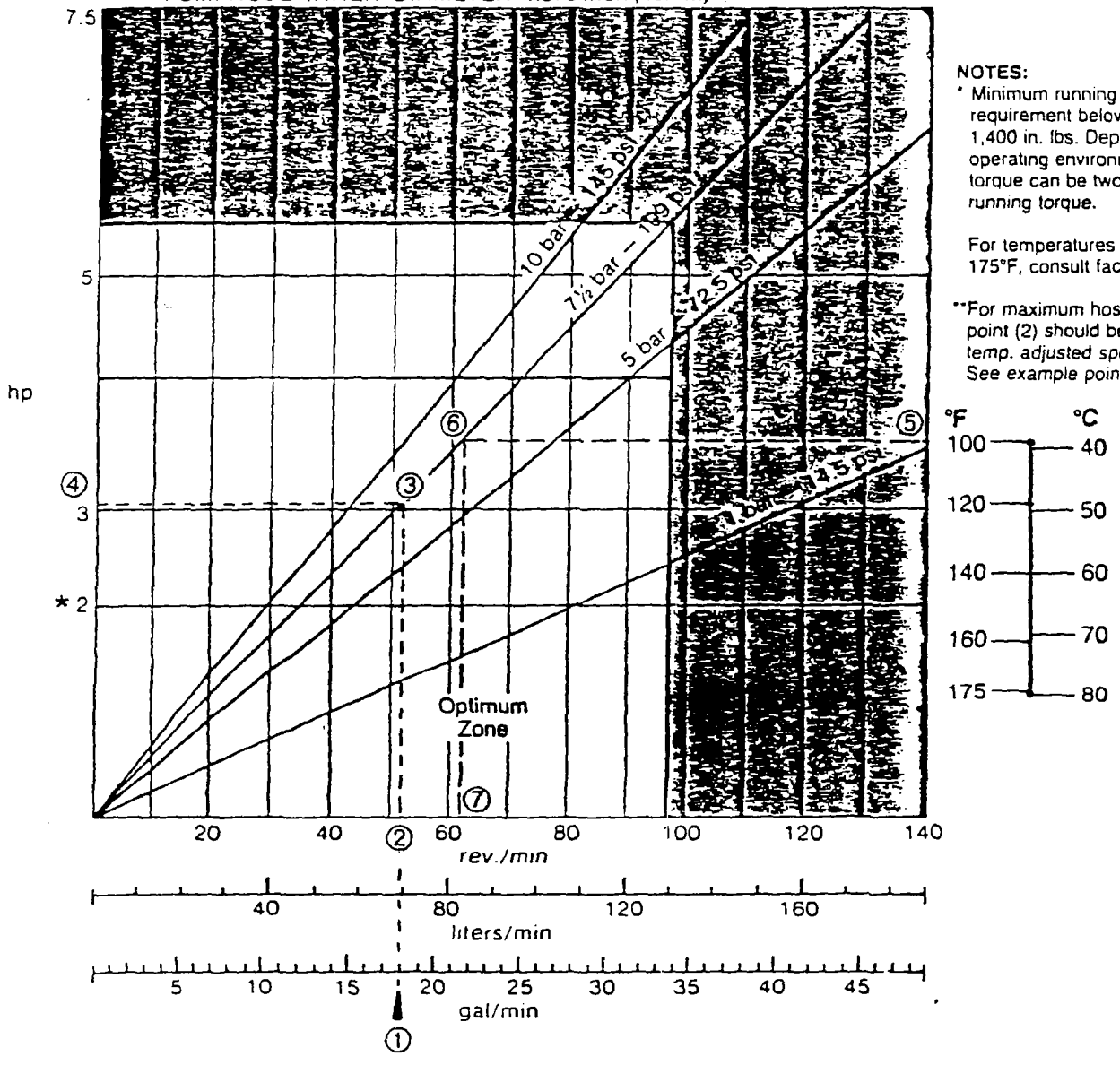
PERFORMANCE CHART

How To Calculate Speed/Horsepower

① Flow Required
② Required Speed
③ Calculated Pressure
④ Horsepower Required*
⑤ Fluid Temperature
⑥ Calculated Pressure
⑦ *Max. Recommended R.P.M.***

TYPE SP/40

PORTS ASA - 150# 1-1/2" Displacement per rev. .35 gal./1.33 liter
PUMPHOSE INNER DIAMETER 1.576 Inch (40mm)



NOTES:

* Minimum running drive torque requirement below this hp is 1,400 in. lbs. Depending on operating environment, starting torque can be two to three times running torque.

For temperatures higher than 175°F, consult factory.

**For maximum hose life, speed point (2) should be lower than temp. adjusted speed point (7). See example points (1) thru (7).

0041-0370

OW 004757

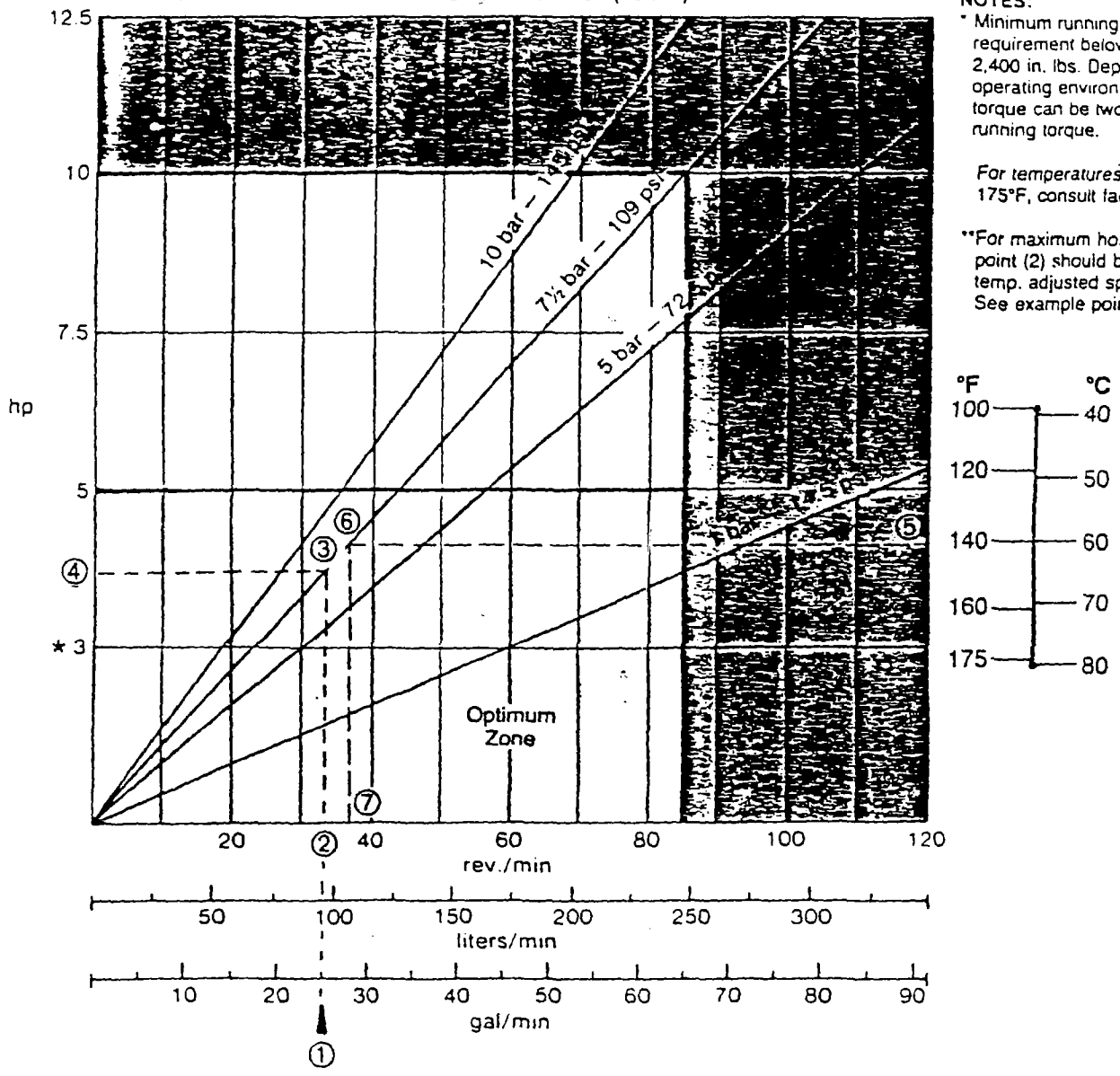
PERFORMANCE CHART

How To Calculate Speed/Horsepower

1. Flow Required
2. Required Speed
3. Calculated Pressure
4. Horsepower Required
5. Fluid Temperature
6. Calculated Pressure
7. Max. Recommended R.P.M.**

TYPE SP/50

PORTS ASA - 150# 1-1/2" Displacement per rev. .76 gal./2.88 liter
PUMPHOSE INNER DIAMETER 1.97 Inch (50mm)



NOTES:

* Minimum running drive torque requirement below this hp is 2,400 in. lbs. Depending on operating environment, starting torque can be two to three times running torque.

For temperatures higher than 175°F, consult factory.

**For maximum hose life, speed point (2) should be lower than temp. adjusted speed point (7). See example points (1) thru (7).

0041-0371

OW 004758

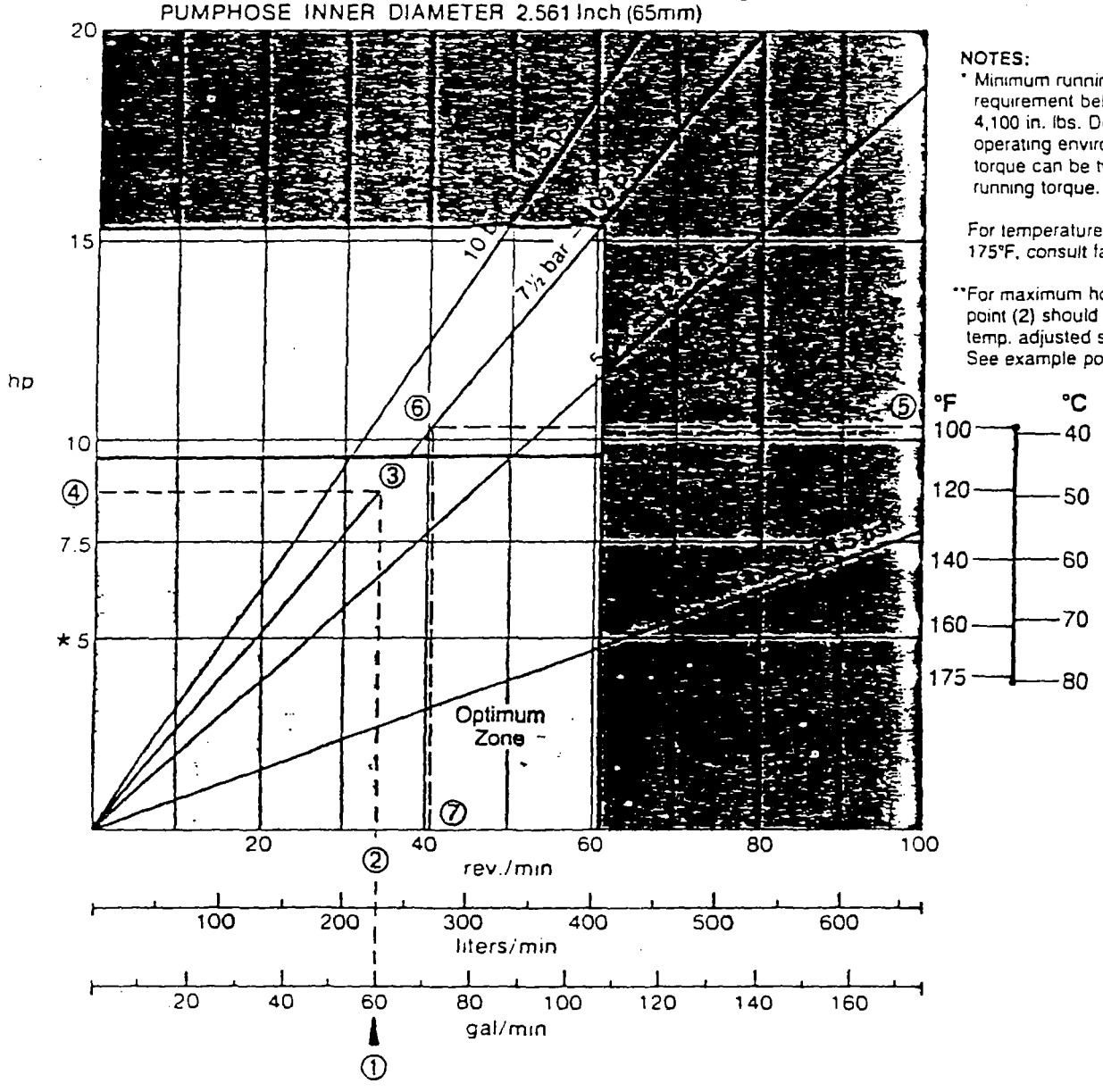
PERFORMANCE CHART

How To Calculate Speed/Horsepower

1. Flow Required
2. Required Speed
3. Calculated Pressure
4. Horsepower Required
5. Fluid Temperature
6. Calculated Pressure
7. Max. Recommended R.P.M.**

TYPE SP/65

PORTS ASA - 150# 2-1/2" Displacement per rev. 1.75 gal./6.62 liter
PUMPHOSE INNER DIAMETER 2.561 Inch (65mm)



NOTES:

* Minimum running drive torque requirement below this hp is 4,100 in. lbs. Depending on operating environment, starting torque can be two to three times running torque.

For temperatures higher than 175°F, consult factory.

**For maximum hose life, speed point (2) should be lower than temp. adjusted speed point (7). See example points (1) thru (7).

0041-0372

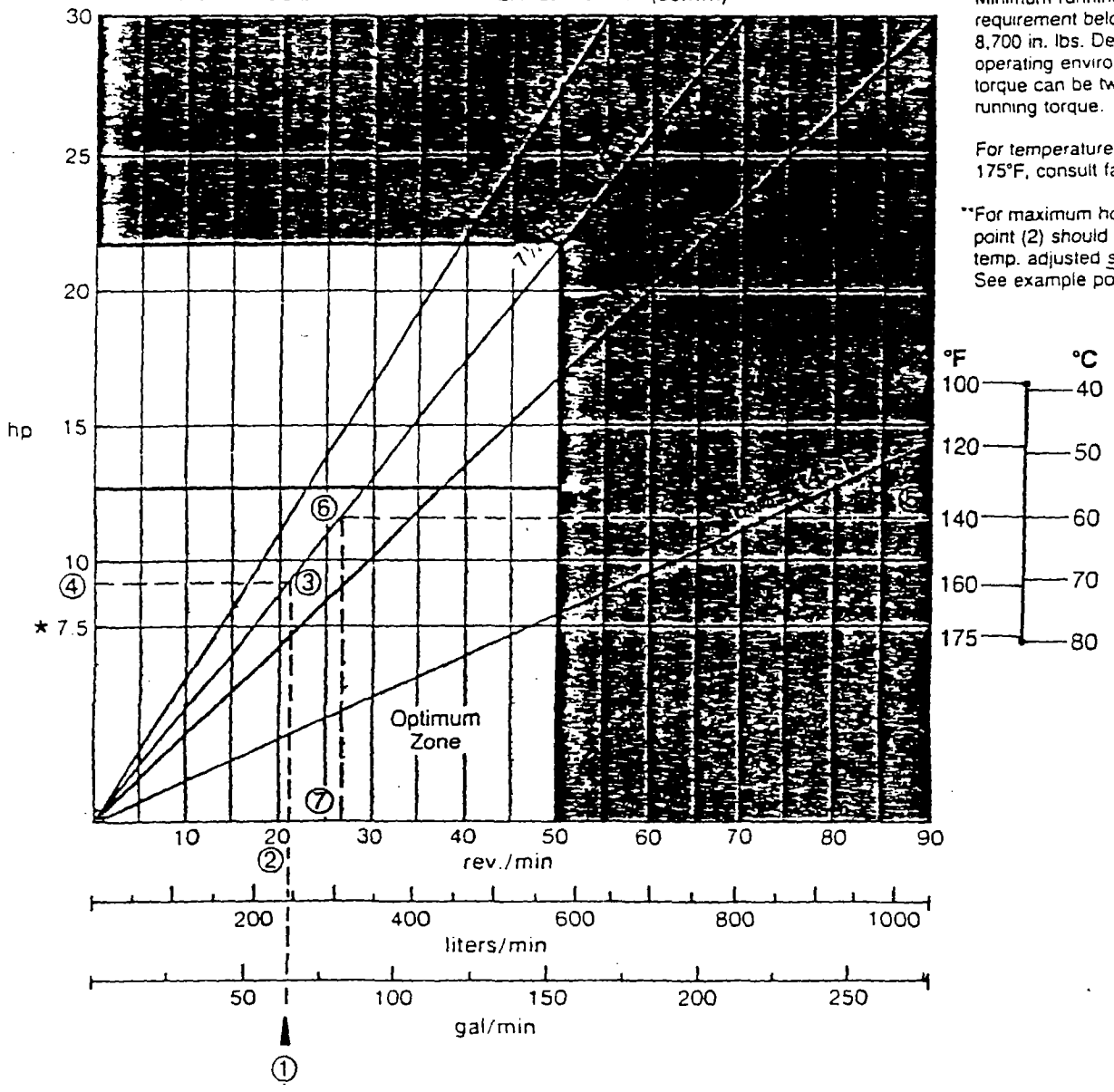
PERFORMANCE CHART

How To Calculate Speed/Horsepower

① Flow Required
② Required Speed
③ Calculated Pressure
④ Horsepower Required
⑤ Fluid Temperature
⑥ Calculated Pressure
⑦ Max. Recommended R.P.M.**

TYPE SP/80

PORTS ASA - 150# 3" Displacement per rev. 3.08 gal./11.7 liter
PUMPHOSE INNER DIAMETER 3.152 Inch (80mm)



NOTES:

* Minimum running drive torque requirement below this hp is 8,700 in. lbs. Depending on operating environment, starting torque can be two to three times running torque.

For temperatures higher than 175°F, consult factory.

**For maximum hose life, speed point (2) should be lower than temp. adjusted speed point (7) See example points (1) thru (7

0041-0373

OW 004760

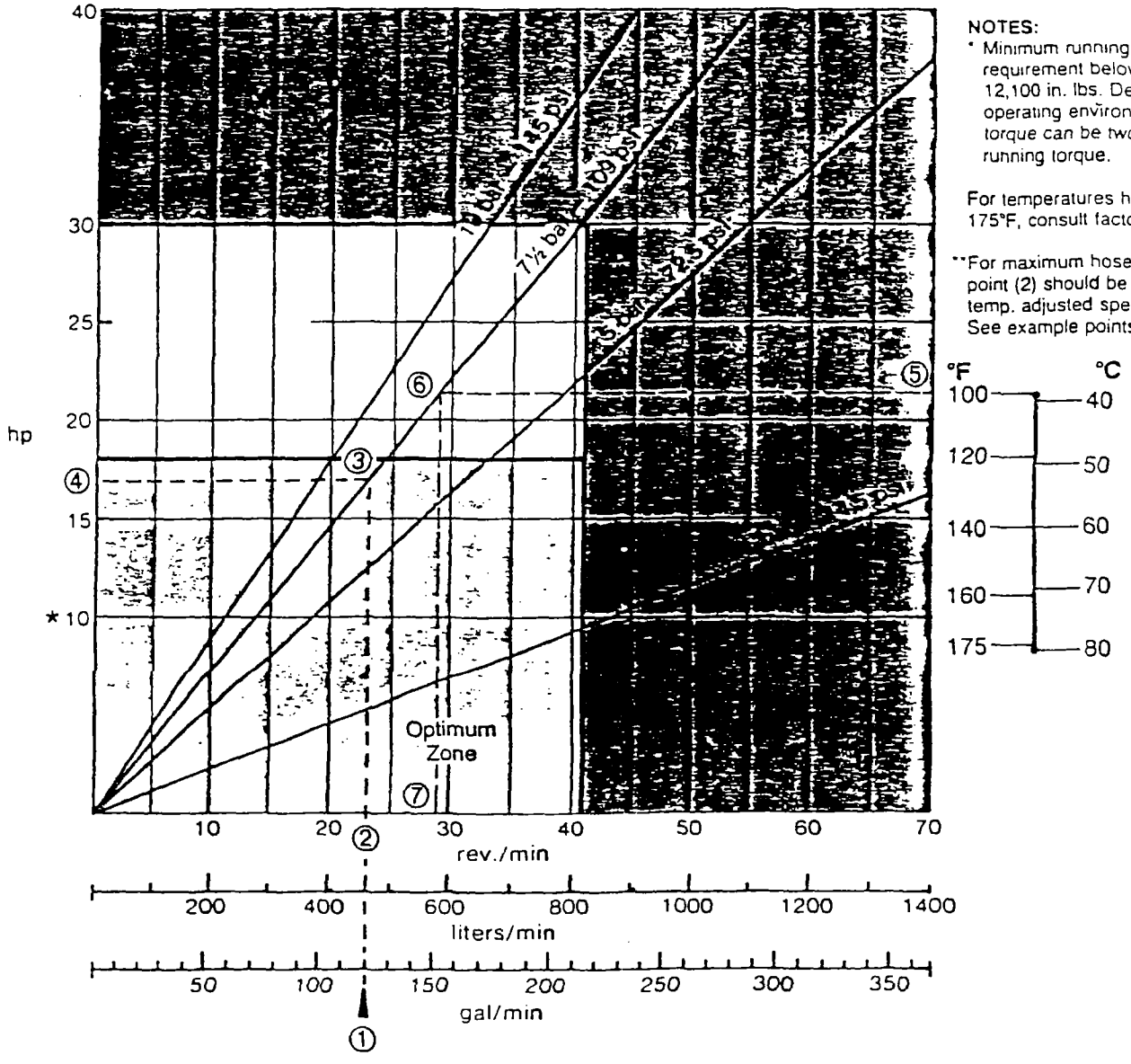
PERFORMANCE CHART

How To Calculate Speed/Horsepower

1. Flow Required
2. Required Speed
3. Calculated Pressure
4. Horsepower Required
5. Fluid Temperature
6. Calculated Pressure
7. Max. Recommended R.P.M.**

TYPE SP/100

PORTS ASA - 150# 4" Displacement per rev. 5.25 gal./19.9 liter
PUMPHOSE INNER DIAMETER 3.94 Inch (100mm)



NOTES:

* Minimum running drive torque requirement below this hp is 12,100 in. lbs. Depending on operating environment, startir torque can be two to three tir running torque.

For temperatures higher than 175°F, consult factory.

**For maximum hose life, speed point (2) should be lower than temp. adjusted speed point (7) See example points (1) thru (7

0041-0374

OW 004761

Chemical Compatibility of Buna and Natural Rubber Hose Material

The following, is a partial list of common fluids which can be handled by WAUKESHA/Bredel HOSEPUMPS incorporating buna or natural rubber hoses. Many other liquids can be handled at a variety of conditions. This list is intended as a guide only and Waukesha reserves the right of approval of all applications.

Acetone*
Alcohol
Aluminum Chloride
Aluminum Fluoride
Aluminum Hydroxide
Aluminum Sulfate
Ammonium Chloride
Ammonium Hydroxide*
Ammonium Nitrate
Ammonium Sulfate
Amyl Alcohol
Amylether
Barium Chloride
Barium Sulfate
Barium Sulfide
Bismuth Carbonate
Black Sulfate Liquor
Borax
Butyl Ether
Butyl Glycol
Butyl Stearate
Calcium Acetate
Calcium Carbonate
Calcium Ehlorate
Calcium Chloride
Calcium Hydroxide
Calcium Sulfate
Calcium Sulfide
Castor Oil
Caustic Soda
Cellulose Acetate
Copper Chloride
Copper Cyanide
Copper Sulfate
D.d.t. 2 - Kerosene
Di-ethyl Amine*
Di-ethyl-ether
Di-ethyl-glycol
Di-iso-propyl-ether
Di-methyl-formamide
Ethanolamine
Ethylcellulose*
Ethylene Glycol
Ethyl Alcohol
Ethyl-propyl-ether
Ethyl Silicate
Formaldehyde
Fuel Oil
Gasoline 100 Octane
Glycerine
Glycol
Green Sulfate Liquor
Hexane
Hexyl-Alcohol
Isopropyl Acetate*
Isopropylether
Magnesium Chloride
Magnesium Hydroxide*
Magnesium Nitrate
Magnesium Sulfate
Mercuric Chloride
Mercury
Methanol
Methyl Aniline*
Methyl Iodide*
Mineral Oil
Nickel Chloride
Nickel Sulfate
Sodium Acetate
Sodium Bicarbonate
Sodium Chloride
Sodium Cyanide
Sodium Silicate
Sodium Sulfide
Sulfate
Talc Slurry
Tallow
Turpentine
Vinyl Chloride*
Water 180 deg. F.
Zinc Acetate
Zinc Ammonium Chloride

*These fluids require the use of natural rubber hoses

PERISTALTIC TYPE HOSEPUMP

LAKE POLY

AND

ACID PITS

0041-0376

LAKE POLY

This solid waste management unit (SWMU) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). The attached report contains information pertaining to this unit. It was prepared prior to Olin's acquisition of the property and extracted from those files/records retained at the facility. Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that most of the plant's process wastewaters were discharged through this SWMU.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

ACID PITS

These three solid waste management units (SWMU) were used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). The attached report contains information pertaining to these units. It was prepared prior to Olin's acquisition of the property and extracted from those files/ records retained at the facility. Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that most of the plant's process wastewaters were discharged to these units.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

OTHER DISPOSALS

BURIAL TRENCH IN THE VICINITY OF THE EAST AND WEST WAREHOUSES

This solid waste management unit (SWMU) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). Accordingly, Olin cannot attest to the accuracy or the completeness of information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that possibly 30-100 lb. drums of aluminum chloride and 7 drums of Kempore (azodicarbonamide) may have been disposed in this unit.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

DRUMS NORTH OF LAGOON II

This solid waste management unit (burial trench) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). Accordingly, Olin cannot attest to the accuracy or the completeness of information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that possibly drums of Opex 93 (dinitrosopentamethylenetetramine) and Kempore (azodicarbonamide) may have been disposed of in this unit.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

OPEX VICINITY OF LAGOON I

This solid waste management unit (SWMU) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that possibly Opex (dinitrosopentamethylenetetramine) material may have been disposed of in this area.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

OPEX DRUMS WEST OF WEST WAREHOUSE

This solid waste management unit (burial trench) was used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of this unit. Olin, however, has been advised by former Stepan employees that possibly 100 drums of Opex (dinitrosopentamethylenetetramine) may have been disposed of in this unit.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

SEPTIC TANKS

QUESTION 1:

SWMU: Septic Tank (Three active: 1) west of pilot plant, 2) south of boiler house, 3) between east and west warehouses

b) Type of Unit: Septic Tank

Dimensions: 1) 9 ft. x 6 ft. x ? plus drain field - see attached drawing
2) Unknown
3) Unknown

Information on how unit was designed, constructed, operated and maintained: Unknown - see attached Drawing A for Unit 1.

c) Date in use: Unknown to present

d) Quantity and Type(s) of wastes managed in unit: Sanitary

e) Releases of hazardous wastes or hazardous constituents: None to the best of our knowledge

f) Information, data and documentation concerning any releases: None

g) Corrective actions: None required

For more detailed information pertaining to the design, construction, operation, maintenance or regarding any possible releases prior to Olin's acquisition on September 15, 1980, please contact Stepan Chemical Company, Inc., Edens and Winnetka Roads, Winnetka, Illinois 60093-0000, (312) 446-7500.

INACTIVE SEPTIC TANKS

TILE FIELD SOUTH OF PLANT A, TILE FIELD EAST OF PLANT B

These solid waste management units (Septic Tanks) were used (and closed) during the period in which Stepan Chemical Company, Inc. and/or its predecessor National Polychemicals Inc. owned and operated this facility (1953-1980). The attached drawings contain information pertaining to these units. They were prepared prior to Olin's acquisition of the property and extracted from those files/records retained at the facility. Accordingly, Olin cannot attest to the accuracy or the completeness of the information pertaining to the operation or design of these units. The volume and composition of material discharged to these two as well as other "septic type fields" that have been uncovered during plant construction excavations is unknown.

Stepan Chemical Company, Inc., Edens & Winnetka Roads, Winnetka, Illinois 60093-0000, (312-446-7500) should be contacted for more detailed information regarding this SWMU.

PLANT B TANK FARM AND VICINITY

0041-0387

QUESTION 2:

Other units that hold or have held hazardous substances and from which there have been releases of hazardous constituents: Plant B Production Area and Tank Farm

b) Type of unit: Six carbon steel, 15,000-gallon. Concrete dike installed in 1981. Other smaller tank(s) may have been utilized for processing/storage in this area

Dimensions: Dike for 6 15,000-gallon tanks approximately 26 ft. x 35 ft. x 1.5 ft.

c) Dates in use: Unknown-Current

d) Quantity and types of hazardous substances managed in unit: Unknown

e) Dates, quantity and types of any known releases: Undocumented reports of releases in 50's and 60's of diisobutylene, diphenylamine, dioctylphthalate, dioctyldiphenylamine. Believed to be source of seep along east side of plant.

f) Information, data, documentation concerning any releases: None

g) Corrective actions (completed or underway): Interceptor well system was installed in 1982 and located to east of tank farm by small drainage ditch. Consists of 4 pumping wells of 1-2 gpm each, separation tank, skimmer for nonaqueous phase liquids and carbon treatment of water phase prior to in-plant usage. Interceptor well system described under Question 1, SWMU.

APPENDIX C

REMEDIAL ACTIONS

GROUNDWATER STUDIES

FIELD INVESTIGATION

0041-0390

PCB CAPACITOR FIRE

0041-0391

QUESTION 2:

Other units that hold or have held hazardous substances and from which there have been releases of hazardous constituents: PCB capacitor

b) *Type of unit: Electrical Capacitor*

Dimensions: Unknown

c) Dates in use: 01/01/65-8/24/85

d) Quantity and types of hazardous substances managed in unit: 16.4 kilograms of PCB;s

e) Dates, quantity and types of any known releases: August 24, 1985 capacitor ruptured and spilled material also minor fire erupted

f) Information, data, documentation concerning any releases: Analysis of spill area after cleanup is attached

g) Corrective actions (completed or underway): Capacitor removed and sent offsite for disposal. Emergency contractor (Clean Harbors, Inc.) performed cleanup of area and material immediately after failure. DEQE and NRC notified. Fire Department and MA DEQE responded.

MDT
For your files
92
10/5/85

RECEIVED
OCT 31 1985
J. W. O'GRADY

Clean Harbors inc.

OLIN/WILMINGTON
2
PURCHASING

RECEIVED
OCT 2[illegible] 1985
OLIN CORP. [illegible]
MDT

October 23, 1985

Olin, Corporation
51 Eames Street
Wilmington, Mass 01887
Attn: Brenda

Dear Brenda:

Enclosed please find the results of the analysis Clean Harbors, Inc., has performed for you.

If there are any questions please feel free to contact me at our Boston office number (617)269-5830.

Sincerely,

Fran Matuszewski

Fran Matuszewski
Environmental Field Chemist

AD/lc

0041-0393

OW 004799

CleanHarbors

OF NATICK, INC.
REPORT OF ANALYSIS

Clean Harbors, Inc.
100 Joseph St.
P. O. Box 193
Kingston, MA 02364

Attn: Mr. Robert Remmes

Sample Identification: Olin Corp.
Wilmington, MA PCB Wipe Samples

Date Received: 8/30/85

CHNA Lab #: 15415-15424

P. O. #: Willett

Job # 7852K

Sample Identification	MDL (ug/100 cm²)	Total PCB's* Conc. (ug/100 cm²)	Size of Sample Area (cm²)	Extraction Date	Analysis Date
A	0.036	8.9	1394	9/5/85	9/26/85
B	0.036	40	1394	9/5/85	9/26/85
C	0.027	78	1858	9/5/85	9/26/85
D	0.036	17	1394	9/5/85	9/26/85
E	0.036	340	1394	9/5/85	9/26/85
F	0.036	190	1394	9/5/85	9/26/85
G	0.027	2,400	1858	9/5/85	9/26/85
H	0.036	6.1	1394	9/5/85	9/26/85
K	0.054	27	929	9/5/85	9/26/85
L	0.015	3.8	3226	9/5/85	9/26/85

This laboratory follows quality assurance/quality control procedures outlined in EPA Publication EPA-600/4-79-019 "Handbook for Analytical Quality Control in Water and Wastewater Laboratories" March 1979 and specific QA/QC requirements of the procedures listed.

The information contained in this report is to the best of my knowledge, accurate and complete.

Notes *Aroclor 1016

Per/Date: David E. Newton 10/4/85
David E. Newton
Laboratory Manager

0041-0394

OW 004800

Olin CHEMICALS
P.O. BOX 248, CHARLESTON, TN 37310, (615) 336-4000

July 30, 1986

Ms. Lynn Cusick
U. S. Environmental Protection Agency
Waste Management Division
J. F. Kennedy Federal Building - Room 1903
Boston, Massachusetts 02203

CERTIFIED MAIL --
RETURN RECEIPT REQUESTED

Re: Olin Corporation
Wilmington, Massachusetts
EPA I. D. No. MAD001403104

Dear Ms. Cusick:

As requested, please find attached information prepared pursuant to Section 3007 of the Resource Conservation and Recovery Act, 42 USC Section 6927, and Section 104 of the Comprehensive Environmental Response Compensation and Liability Act of 1980, 42 USC 9604. Olin purchased this facility on September 15, 1980. Information contained in this disclosure pertaining to events prior to that date was developed by searching those records that were available to us and through employee interviews. Accordingly, we cannot attest to the accuracy or the completeness of the information prior to Olin's purchase. Should you require additional information prior to September 15, 1980, please contact Stepan Chemical Company, Northfield, Illinois. Olin Corporation submitted its closure plans for its RCRA facilities on April 14, 1986 to the Massachusetts DEQE and the USEPA. Olin Corporation ceased chemical production operations at the Wilmington facility on July 1, 1986 and product blending will cease on or about September 1, 1986.

For review purposes, the attachments have been divided into three appendices: Appendix A contains location maps showing the location of the various solid waste management units, as well as any other known units whether currently in operation or not, which hold or have held hazardous substances and from which there have been reported releases of hazardous constituents. This information is provided in response to Questions 1a and 2a. A topographic map of the facility showing contours at 5 feet or less (as requested) is not available due to the fact that a Part B application is not being prepared/filed. Alternately, we have provided the best maps that are available of the facility including a USGS topographic map. Also, we are not aware of any drinking water wells or surface water drinking supplies within 1,000 feet of the boundaries of our facility. The creeks and streams which flow near and through the facility flow to the Aberjona River.

Appendix B of the attachments contain responses to items b through g for both questions 1 and 2 as identified in your letter.

Appendix C contains information pertaining to remedial work, groundwater studies and field investigation work reports (USEPA) performed at this facility.

0041-0395

Only incidents involving more than the reportable quantity (RQ) as established by the USEPA have been included in today's submittal. In some other non-RQ cases, local or state agencies were notified at the time of occurrence.

I trust the enclosed information adequately responds to your inquiries. Should you have any questions with today's submission, please contact Mr. Jack W. O'Grady at 615/336-4541.

Very truly yours,

OLIN CORPORATION

Verrill M. Norwood, Jr.

Verrill M. Norwood, Jr.

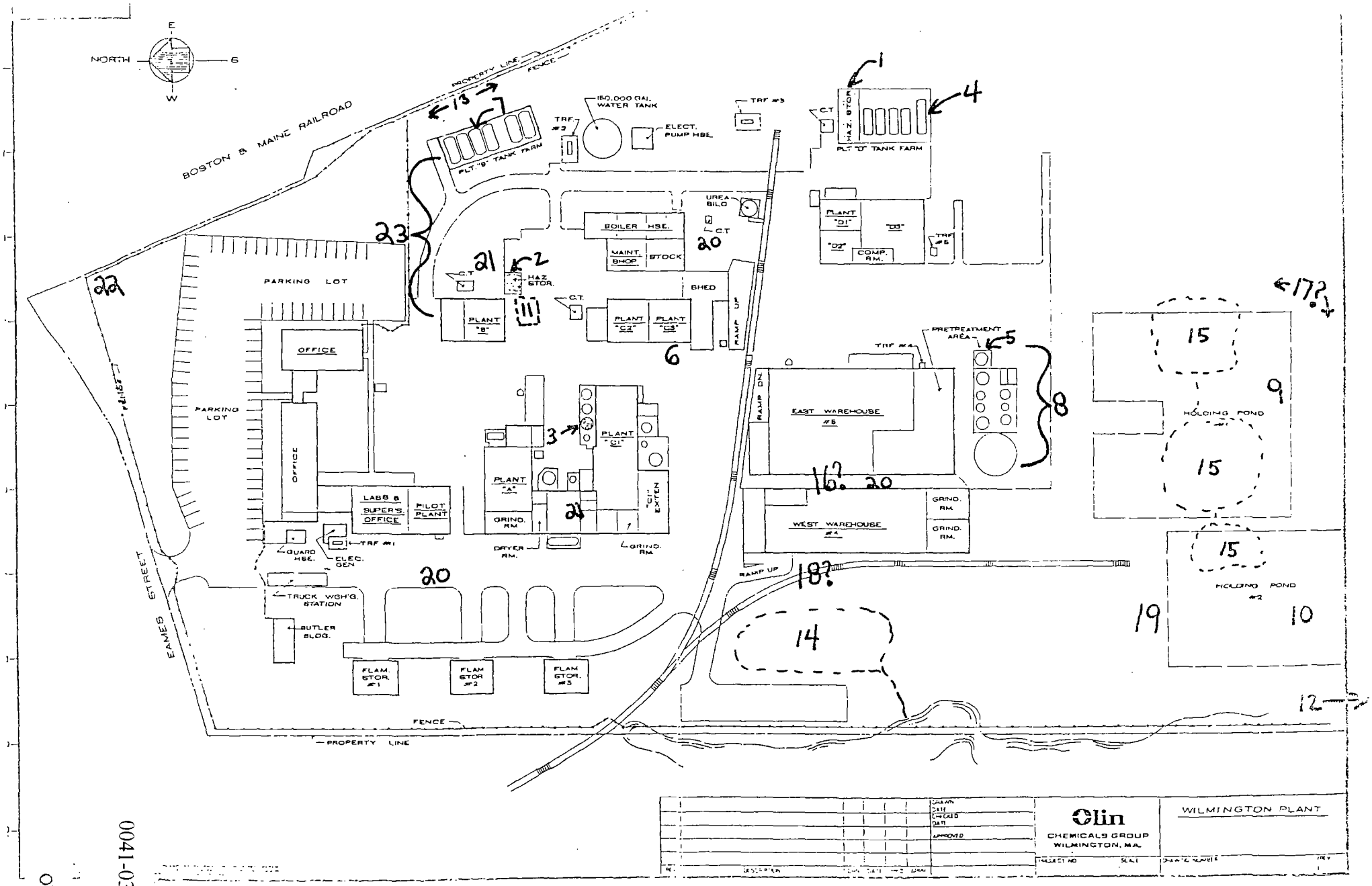
VMN/vrp
040/VMN7
Attachments

cc: Mr. David Berry
Massachusetts Department of
Environmental Quality & Engineering
Division of Solid and Hazardous Waste Management
One Winter St.
Boston, MA 02108

Ruby Sherwood - Stamford

APPENDIX A

LOCATION MAPS



0041-0399

OW 004680

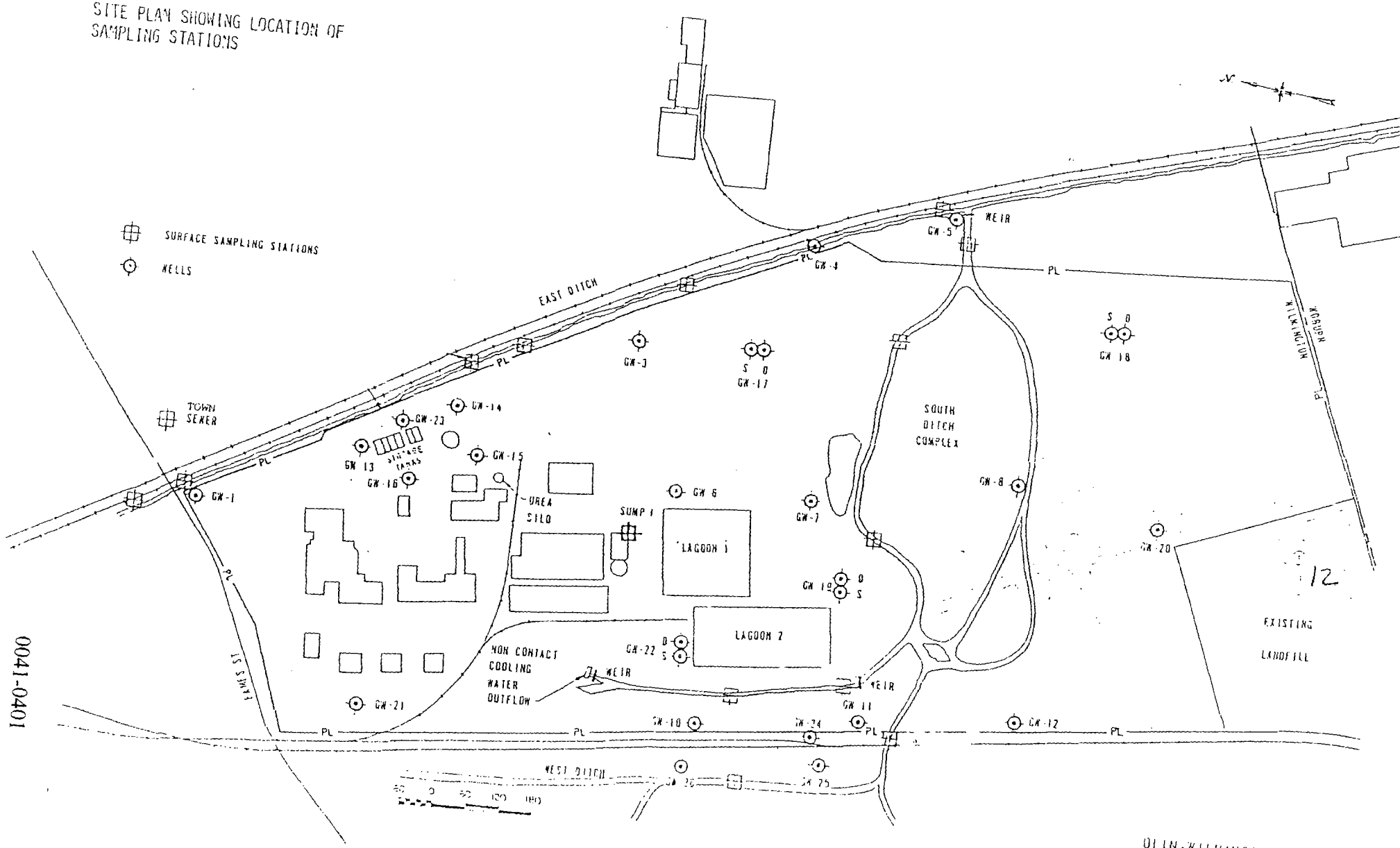
SWMU

1. Plant D Drum Storage Unit
2. Plant B Drum Storage Unit
3. By-Product HCl Tank
4. By-Product Ammonium Hydroxide Tank
5. By-Product Ammonium Hydroxide Tank
6. By-Product Ammonium Hydroxide Tank (Removed)
7. By-Product Ammonium Hydroxide Tank
8. Wastewater Treatment Plant
9. Lagoon I
10. Lagoon II
11. Plant B Pit
12. Calcium Sulfate Landfill
13. Interceptor Well System
14. Lake Poly
15. Acid Pits
16. Trench in the Vicinity of the East and West Warehouses
17. Opex Vicinity of Lagoon I
18. Opex Drums West of West Warehouse
19. Drums North of Lagoon II
20. Septic Tank, Active
21. Tile Field, Inactive

OTHER

22. PCB Capacitor
23. Plant B Production Area and Tank Farm

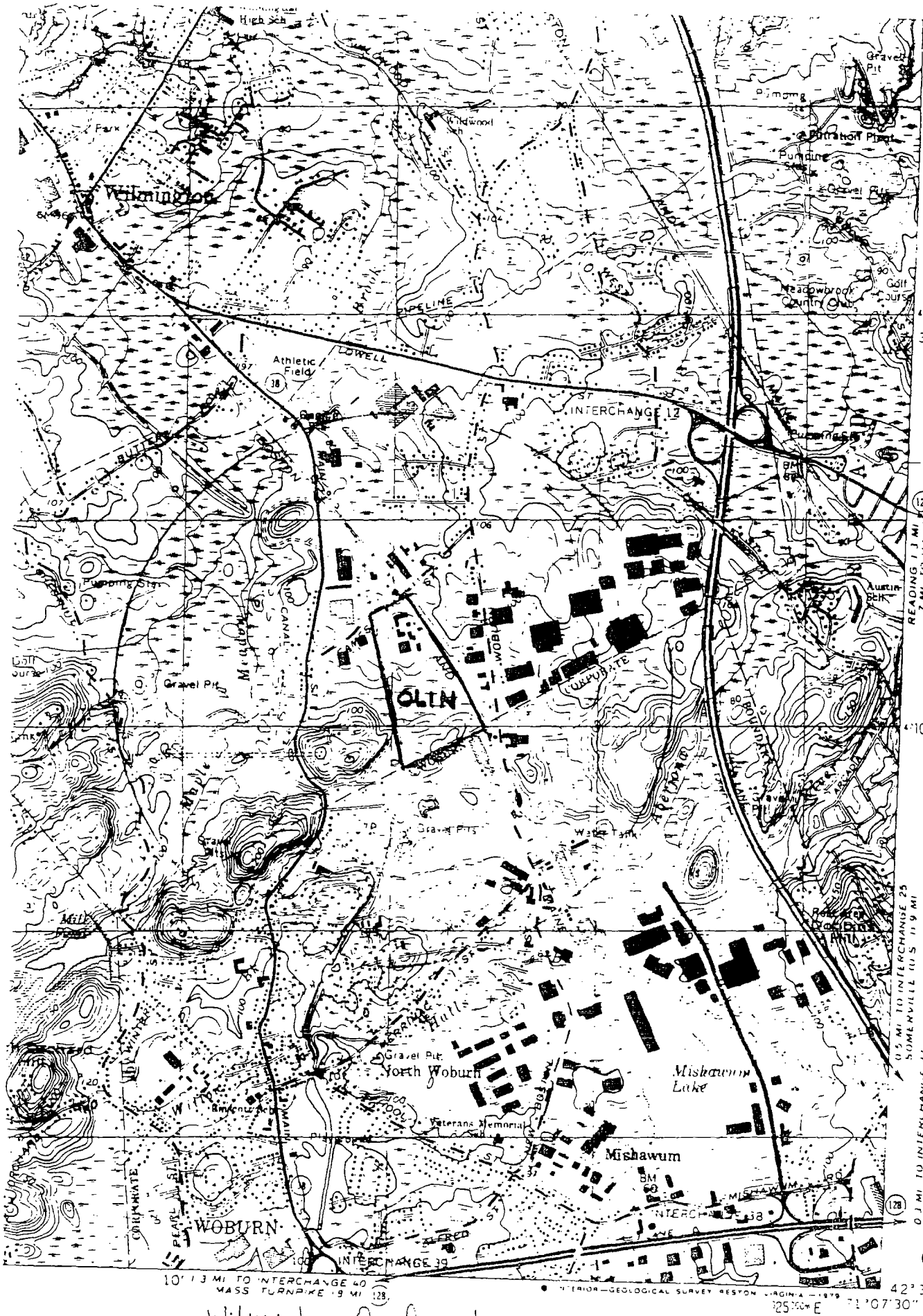
SITE PLAN SHOWING LOCATION OF SAMPLING STATIONS



OLIN-WILMINGTON NA.
Monitoring Wells

0041-0401

OW 004682



Wilmington Quadrangle

OW 004683

0041-0402

APPENDIX B

HAZARDOUS WASTE STORAGE UNITS

QUESTION 1:

SWMU: Plant D Drum Storage

b) Type of Unit: Storage Area

Dimensions: 18.7' x 46.2' x 5 inch

Information on how unit was designed, constructed, operated and maintained: Concrete pad with 6' chain link fence. Gate kept locked except when drums placed in or moved out. Weekly inspections took place.

c) Date in use: 1980-1986. Closure plans submitted April 14, 1986 (see attached)

d) Quantity and Type(s) of wastes managed in unit: Unit had capacity for up to 320 drums. Types of hazardous waste stored in unit: P105, U028, U154, D008, D001, M001. See attached Part A for additional information.

e) Releases of hazardous wastes or hazardous constituents: None

Date: N/A

Quantity: N/A

Type: N/A

f) Information, data and documentation concerning any releases: N/A

g) Corrective actions: None required

QUESTION 1:

SWMU: Plant B Drum Storage

b) Type of Unit: Storage Area

Dimensions: 12 ft. x 18 ft. x 5 in.

Information on how unit was designed, constructed, operated and maintained: Concrete pad with curb and 6' chain link fence. Gate kept locked except when drums added or removed. Weekly inspections.

c) Date in use: 1980-1986. Closure plan submitted April 14, 1986 (see attached)

d) Quantity and Type(s) of wastes managed in unit: Unit had capacity for up to 88 drums. Types of waste stored in unit: P105, U028, U154, D008, D001, M001. See attached Part A for additional information.

e) Releases of hazardous wastes or hazardous constituents: None

Date: N/A

Quantity: N/A

Type: N/A

f) Information, date and documentation concerning any releases: N/A

g) Corrective actions: None required

QUESTION 1:

SWMU: HCl Tank

b) Type of Unit: Storage Tank

Dimensions: 10,310-gallon fiberglass tank

Information on how unit was designed, constructed, operated and maintained: Tank located in concrete dike approximately 59 ft. x 18 ft. x 2.5 ft. Inspected weekly.

c) Date in use: 1980-1986. Closure plan submitted April 1986 (see attached)

d) Quantity and Type(s) of wastes managed in unit: Up to 10,310 gallons of 33.3% by product HCl. HCl occasionally neutralized and discharged through on-site treatment plant. See attached Part A for additional information.

e) Releases of hazardous wastes or hazardous constituents: None

Date: N/A

Quantity: N/A

Type: N/A

f) Information, data and documentation concerning any releases: N/A

g) Corrective actions: None required

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

April 14, 1986

Mr. William R. Cass, Director
DEQE
Division of Solid and Hazardous Waste
One Winter Street, 5th Floor
Boston, Massachusetts 02108

Re: Olin Corporation
Wilmington, MA
EPA ID No. MAD 001403104

Dear Mr. Cass:

Olin Corporation hereby requests that the status of its Wilmington facility be changed from "Interim" to "Generator" only. We are also taking this opportunity to notify, both the State and USEPA that Olin is withdrawing its Part A application and will not be making an application for a Part B permit.

Attached for your review and approval are closure plans for the units currently operated at our facility. These are: 2 drum storage units and a storage tank. Upon completion of closure, the drum storage units will be utilized for on-site accumulation pursuant to 310 CMR 30.340. The tank will no longer be utilized for hazardous waste storage.

Should you have any questions or comments, please contact Mr. James Martucci at 617/933-4240 or Mr. Jack O'Grady at 615/336-4541.

Sincerely,

Ronald J. McBrien

R. J. McBrien
Plant Manager JFM

RJM/JWO/wsr
cc: Mr. Gary Gosbee, USEPA Region I
Mr. Richard Chalpin, DEQE, Northeast Region
Mr. Greg Erickson, Director Board of Health
Mr. Steve Dreeszen, DEQE, Chief Licensing and Engineering Branch
Mr. J. F. Martucci
Mr. J. W. O'Grady
Mr. R. B. Sherwood

0041-0408

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

CLOSURE PLAN

SCHEDULE OF FINAL CLOSURE - PLANT D DRUM STORAGE UNIT

A. Estimated year of closure - 1986

B. Final date waste will be added to this storage unit: April 15, 1986. Unit will no longer be utilized for storage of waste greater than 90 days after this date. Unit will be utilized for accumulation per 310 CMR 30.340.

C. Date that all inventory will be removed: 90 days after plan approval

D. Completion of facility decontamination: 135 days after plan approval

E. Final date for closure completion: 180 days after plan approval

F. Total time to close unit: 180 days

The Department of Environmental Quality and Engineering must be notified at least six months before closure is expected to begin and a copy of the latest closure plan must be submitted at that time.

SEQUENCE OF CLOSURE EVENTS

The Plant D drum storage unit receives wastes from throughout the facility. It is constructed of concrete and has inner dimensions of 18.7 ft. x 46.2 ft. x 5 in. The estimated maximum capacity of the drum storage unit is 320 drums.

Phase I - Removal of Inventory

A. For the purposes of this Closure Plan, it will be assumed that the unit is completely full and contains 320 drums of various hazardous wastes generated at the facility. All of the hazardous wastes stored in drums will be disposed of in the following manner:

1. Properly label all of the drums in accordance with the applicable Federal and State transportation regulations.

2. Prepare a hazardous waste manifest before shipment.

3. A transporter who is licensed by the Environmental Protection Agency and the State of Massachusetts will haul all of the hazardous waste stored at this facility to a disposal facility.

4. The disposal facility must have all necessary Federal and State operating permits.

5. Olin Corporation will ensure that the hazardous waste manifest used is properly filled out and returned to the proper authorities.

Phase II - Decontamination of the Facility

A. After removal of all wastes from the unit, the inner area will be hydroblasted to remove any residues accumulated over its operating life. All water generated will be tested, and if it meets the parameters of the facility MDC discharge permit, it will be processed through the plant pretreatment facility. If not, the material will be collected and sent off-site to a properly permitted facility.

B. On completion of the hydroblasting, any discolored areas will be abrasive blasted until all residues are removed. All material generated from this abrasive blasting will be drummed and shipped off-site to a properly permitted facility. After completion of cleaning, the dike walls and base will be tested for Bis(2-ethylhexyl) phthalate, sodium azide and EP metals. Should any be present at significant levels, the unit will be recleaned and retested.

C. On completion of the decontamination, the unit will be inspected by and the closure will be certified by an independent Massachusetts registered professional engineer and by Olin that the facility has been closed in accordance with the specifications in the Closure Plan.

47/JW08

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

CLOSURE PLAN

SCHEDULE OF FINAL CLOSURE - PLANT B DRUM STORAGE UNIT

A. Estimated year of closure - 1986

B. Final date waste will be added to this storage unit: April 15, 1986. Unit will no longer be utilized for storage of wastes for greater than 90 days after this date. Unit will be utilized for accumulation per 310 CMR 30.340.

C. Date that all inventory will be removed: 90 days after plan approval

D. Completion of facility decontamination: 135 days after plan approval

E. Final date for closure completion: 180 days after plan approval

F. Total time to close unit: 180 days

The Department of Environmental Quality and Engineering must be notified at least six months before closure is expected to begin and a copy of the latest closure plan must be submitted at that time.

SEQUENCE OF CLOSURE EVENTS

The Plant B drum storage unit receives wastes from throughout the facility. It is constructed of concrete and has inner dimensions of 12 ft. x 18 ft. x 5 in. The estimated maximum capacity of the drum storage unit is 88 drums.

Phase I - Removal of Inventory

A. For the purposes of this Closure Plan, it will be assumed that the unit is completely full and contains 88 drums of various hazardous wastes generated at the facility. All of the hazardous wastes stored in drums will be disposed of in the following manner:

1. Properly label all of the drums in accordance with the applicable Federal and State transportation regulations.

2. Prepare a hazardous waste manifest before shipment.

3. A transporter who is licensed by the Environmental Protection Agency and the State of Massachusetts will haul all of the hazardous waste stored at this facility to a disposal facility.

4. The disposal facility must have all necessary Federal and State operating permits.

5. Olin Corporation will ensure that the hazardous waste manifest used is properly filled out and returned to the proper authorities.

Phase II - Decontamination of the Facility

A. After removal of all wastes from the unit, the inner area will be hydroblasted to remove any residues accumulated over its operating life. All water generated will be tested, and if it meets the parameters of the facility MDC discharge permit, it will be processed through the plant pretreatment facility. If not, the material will be collected and sent off-site to a properly permitted facility.

B. On completion of the hydroblasting, any discolored areas will be abrasive blasted until all residues are removed. All material generated from this abrasive blasting will be drummed and shipped off-site to a properly permitted facility. After completion of cleaning, the dike walls and base will be tested for Bis(2-ethylhexyl) phthalate, sodium azide and EP metals. Should any be present at significant levels, the unit will be recleaned and retested.

C. On completion of the decontamination, the unit will be inspected by and the closure will be certified by an independent Massachusetts registered professional engineer and by Olin that the facility has been closed in accordance with the specifications in the Closure Plan.

47/JW08

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

CLOSURE PLAN

SCHEDULE OF FINAL CLOSURE - BY-PRODUCT HCl TANK

A. Estimated year of closure - 1986

B. Final date waste will be added to this storage unit: April 15, 1986. Unit will no longer be utilized for storage of wastes for greater than 90 days after this date.

C. Date that all inventory will be removed: 90 days after plan approval

D. Completion of facility decontamination: 135 days after plan approval

E. Final date for closure completion: 180 days after plan approval

F. Total time to close unit: 180 days

The Department of Environmental Quality and Engineering must be notified at least six months before closure is expected to begin and a copy of the latest closure plan must be submitted at that time.

SEQUENCE OF CLOSURE EVENTS

The by-product HCl tank is constructed of fiberglass and has a volume of 10,310 gallons. It contains 33% hydrochloric acid. It is located in a concrete dike approximately 59 ft. x 18 ft. x 2.5 ft. For the purposes of this Closure Plan, it is assumed that the tank is completely full at closure.

Phase I - Removal of Inventory

A. For the purposes of this Closure Plan, it will be assumed that the unit is completely full and contains 10,310 gallons of liquid muriatic acid generated at the facility. The material will most likely be neutralized at the facility and discharged through our pretreatment plant per our MDC permit. However, for the purposes of this Closure Plan, it will be assumed that the material will either be shipped out in bulk or drummed prior to off-site disposal as this would cause the greatest expenditure of funds. The following steps will be taken:

1. Proper labeling of all drums in accordance with applicable Federal and State transportation regulations or proper placarding of the hazardous waste bulk transport vessel.

2. Preparation of a hazardous waste manifest before shipment.

3. Use of a transporter who is licensed by the Environmental Protection Agency and the State of Massachusetts for hauling of the hazardous waste stored in this unit to a disposal facility.

4. The disposal facility must have all necessary Federal and State operating permits.

5. Olin Corporation will ensure that the hazardous waste manifest used is properly filled out and returned to the proper authorities.

Phase II - Decontamination of the Facility

A. After removal of all wastes from the storage tank, the tank will be washed with a neutralizing agent to remove any remaining waste. All cleaning material generated will be tested and if it meets the parameters of the facility MDC discharge permit, it will be processed through the plant's pretreatment facility. If not, the material will be collected and sent off-site to a properly permitted facility. After cleaning, the tanks will be either sold for reuse or salvaged.

B. After removal of the storage tank, the diked area will be hydroblasted to remove any residues accumulated over its operating life. As stated in A above, all water generated will be tested and if it meets the parameters of the facility MDC discharge permit, it will be processed through the plant's pretreatment facility. If not, the material will be collected and sent off-site to a properly permitted facility. Since this unit only contains by-product hydrochloric acid, any incidental material remaining in concrete after cleaning would be neutralized by the concrete itself. Therefore, no testing of the dike walls or base will be necessary.

C. On completion of the decontamination, the unit will be inspected by and the closure will be certified by an independent Massachusetts registered professional engineer and by Olin that the facility has been closed in accordance with the specifications in the Closure Plan.

Olin CHEMICALS

120 LONG RIDGE ROAD, STAMFORD, CONNECTICUT 06904

April 27, 1984

Ms. Nancy Wrenn
Division of Hazardous Waste
DEQE
One Winter Street
Boston, MA 02108

Re: Revised Hazardous Waste Permit Application
Olin Corporation - Wilmington Plant
EPA I.D. No. MAD001403104

Dear Ms. Wrenn:

Please find attached revised Forms 1 and 3 for Olin Corporation's Wilmington, Massachusetts plant. Since the original submission on November 17, 1980, Olin Corporation has submitted two revisions to its RCRA Part A permit application. The first was submitted on January 26, 1983 and in a letter dated March 17, 1983 from the USEPA it was indicated that the amendment had been incorporated into our file. The second amendment was submitted on June 30, 1983 (copy attached) requesting the removal of two 15,000-gallon storage tanks and is currently under review. When the June 30, 1983 request is approved, the facility will have two drum storage units and one storage tank unit remaining at the facility.

The purpose of today's request is to allow for the movement of the storage tank to a diked area meeting the requirements of Mass. 310 CMR 30.694 for secondary containment of above ground storage tanks. Due to space limitations, it is not feasible to upgrade the current containment area to provide for 110% volume of the tank as required in 310 CMR 30.694. Therefore, Olin Corporation requests that its Part A interim status application be revised as provided for in 310 CMR 30.099(a) which allows modification of interim status permits when such modification does not constitute an increase in design capacity.

We wish to also take this opportunity to make some clerical and administrative revisions to our interim status permit. These include:

Form 1, Item X, A - Since the original submission, the plant has been issued an NPDES permit and the number is reflected in this section.

Form 1, Attachment 1, Existing Environmental Permits - This section has been updated to reflect existing permit status.

IV, Line 6, Page 3 of 5 - The designation of storage of this material in SO2, tanks, has been removed. This designation should have been removed when the request to remove the two 15,000-gallon storage tanks was submitted on June 30, 1983. These storage tanks were never used for hazardous waste storage.

0041-0415

Form 3, Item IV, Line 8, Page 3 of 5 - The estimated annual quantity of this material has been changed from 45 tons to 250 tons. The primary uses of this material, by-product HCl, is for use as a feedstock in another production process and neutralization of other waste streams at the facility. On occasions when market demand for products is reduced, some of this material is neutralized and discharged through our MDC-permitted treatment facility. Therefore, the annual amount of this material can vary dramatically.

Form 3, Item V, Page 5 of 5 - The facility drawing has been revised to show the new location of the bulk storage tank.

For your convenience, a complete Form 1 and Form 3 are being submitted to be inserted into our file. This revised application supercedes all previous submissions except to the extent that previous submissions established timely compliance.

We would appreciate your assistance in acting on this revision expeditiously as we are prepared to move the tank to the upgraded containment area upon written approval from your department. As always, your cooperation is appreciated and should you have any questions concerning today's revisions, please do not hesitate to contact Mr. J. W. O'Grady at 615/336-4541.

Sincerely,

OLIN CORPORATION

F. A. Eakin
Vice President
Manufacturing & Engineering

FAE/JWO/vrp

cc: Mr. Jacob Edwards
Date Waste Programs
U. S. Environmental Protection Agency
Room 1903
J.F.K. Federal Building
Boston, Massachusetts 02203

Northeast Region DEQE
323 New Boston Street
Woburn, MA 01801

0041-0416

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F MAD001403104

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, af it in the designated space. Review the infor ation carefully; if any of it is incorrect, cr through it and enter the correct data in appropriate fill-in area below. Also, if any the preprinted data is absent *(the area to left of the label space lists the informat that should appear)*, please provide it in proper fill-in area(s) below. If the label complete and correct, you need not compl Items I, III, V, and VI *(except VI-B wh must be completed regardless)*. Complete items if no label has been provided. Refer the instructions for detailed item desc tions and for the legal authorizations ur which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to an questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third colum if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activi is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK YES	NO	ATT
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		No	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		Yes	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP OLIN CORPORATION

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 McBRIEN RONALD J. PLANT MGR.	617 933 4240

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 51 EAMES STREET

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 WILMINGTON	MA	01887

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 51 EAMES STREET

0041-0417

B. COUNTY NAME

MIDDLESEX

OW 004698

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 WILMINGTON	MA	01887	

CONTINUE C

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
7 2869 (specify) Industrial Organic Chemicals	7 (specify) N/A
C. THIRD	**D. FOURTH**
(specify) N/A	7 (specify) N/A

VIII. OPERATOR INFORMATION

A. NAME

8 OLIN CORPORATION

B. Is the name listed Item VIII-A also t owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)

F = FEDERAL, S = STATE, P = PRIVATE, M = PUBLIC (other than federal or state), O = OTHER (specify)

P (specify)

D. PHONE (area code & no.)

A 203 356 2000

E. STREET OR P.O. BOX

120 LONG RIDGE ROAD

F. CITY OR TOWN	G. STATE	H. ZIP CODE
B STAMFORD	CT	06904

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)
9 N MA0005304	9 P NONE
B. UIC (Underground Injection of Fluids)	**E. OTHER** (specify)
9 U NONE	9 SEE ATTACHED (specify)
C. RCRA (Hazardous Wastes)	**E. OTHER** (specify)
R INTERIM STATUS	9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Manufacturer of chemical blowing agents, antioxidants, stabilizers and other specialty chemicals for the rubber and plastics industry.

XIII. CERTIFICATION (see instructions)

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

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
.A. Eakin, Vice President Manufacturing and Engineering	MES 4/21/84 [signature]	4/30/84

COMMENTS FOR OFFICIAL USE ONLY

C

Olin Corporation
Wilmington, Massachusetts Plant
MAD001403104

FORM 1 - ATTACHMENT 1 (Revised 4/27/84)

II.C.: Forms 1 and 2C were submitted on May 5, 1982.

II.E.: Original Forms 1 and 3 were submitted on November 17, 1980.

X. Existing Environmental Permits

1. Letter of Approval to Operate Sanitary Landfill dated January 9, 1975.

2. Industrial User Discharge Permit, Metropolitan District Commission, Dated July 7, 1982.

3. Letter of Approval to Construct Gypsum Storage Lagoon No. 1, dated July 16, 1971.

4. Letter of Approval to Construct Gypsum Storage Lagoon No. 2, dated September 10, 1973.

5. Letters of Approval to Construct Bag Collection Systems dated July 12, 1983 and July 18, 1974.

6. Letters of Approval to Construct and Operate an Air Scrubber dated October 20, 1982 and July 28, 1983.

Please print or type in the unshaded areas only
(shaded areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F M A D 0 0 1 4 0 3 1 0 4

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facilit EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

C 8 — FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR.	MO.	DAY

☐ 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILIT PROVIDE THE DA (yr., mo., & day) OP TION BEGAN OR I EXPECTED TO BE

YR.	MO.	DAY

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☒ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided f entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, tl describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. **PROCESS DESIGN CAPACITY** – For each code entered in column A enter the capacity of the process.
1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	C

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and t other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G		5				
X-2	T03	20	E		6				
1	S01	17,390	G		7				
2	S02	10,310	G		8				
3					9				
4					10				

OW 004701

0041-0420

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, 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 column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column 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 column 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 column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III 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: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

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

EXAMPLE FOR COMPLETING ITEM IV *(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 operation. 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 NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				included with above

0041-0421

OW 0041-

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W M A D 0 0 1 4 0 3 1 0 4 T/A C 1	W DUP T/A C 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	P105	250	P	S01	
2	U028	5000	P	S01	
3	U154	1000	P	S01	
4	D008	9	T	S01	
5	D001	15	T	S01	
6	D001	13	T	S01	
7	U028				Included with above
8	D002	250	T	S02 T01	
9	M001	6700	P	S01	
10					
11					
12					
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25					
26					

0041-0422

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Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

FMAD001403104 T/N C 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
42 31 34N	071 09 15W

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F	G		

IX. OWNER 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 fine and imprisonment for knowing violations.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
F.A. Eakin, Vice President Manufacturing and Engineering	[signature]	4/30/84

X. OPERATOR CERTIFICATION

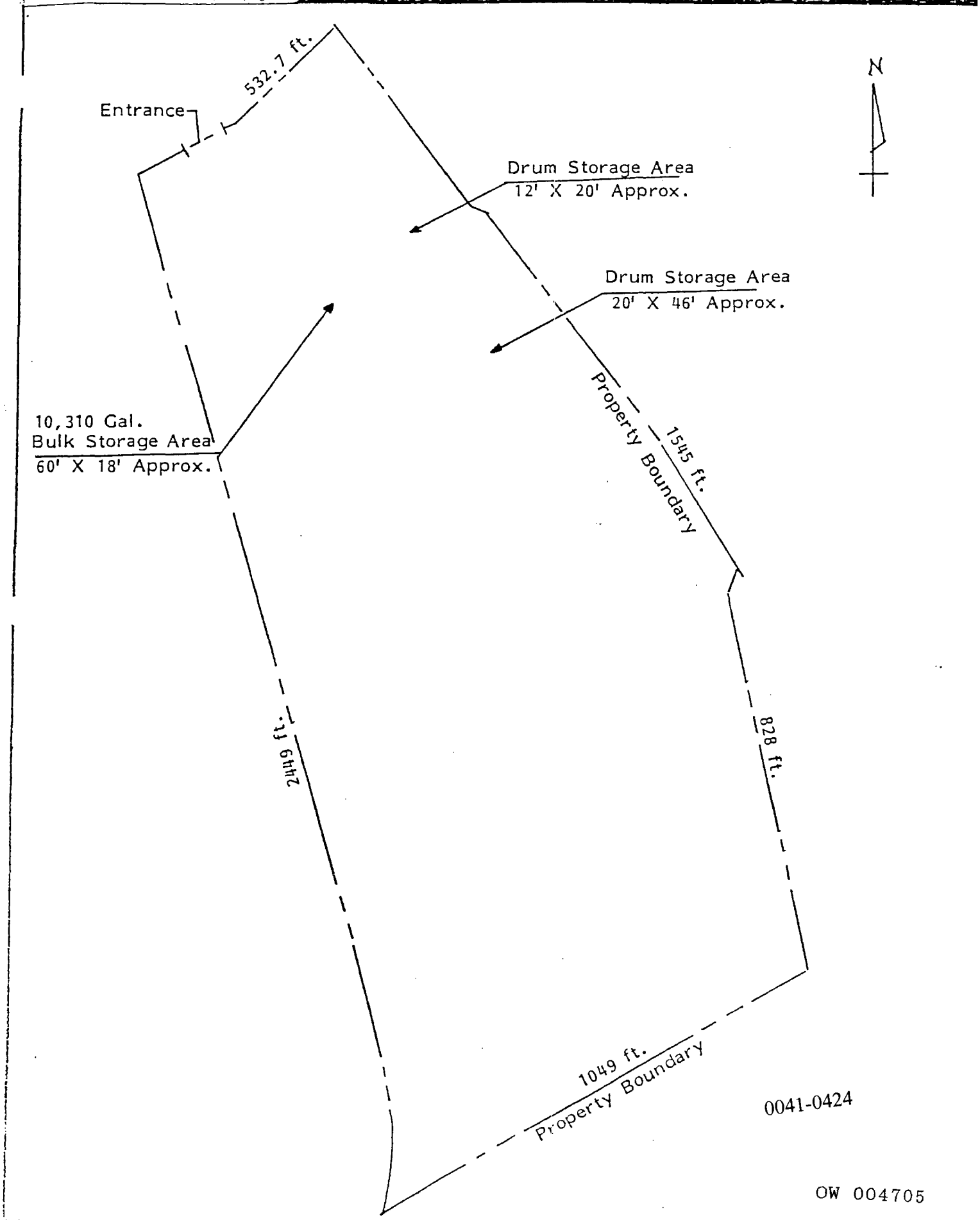
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED

Continued from page 4.

Form Approved OMB No. 153-S80004

V. FACILITY DRAWING (see page 4)



0041-0424

OW 004705

Olin CHEMICALS GROUP

120 LONG RIDGE ROAD, STAMFORD, CT 06904

WILLIAM A. OPPOLD

Senior Vice President
Manufacturing and Engineering

June 30, 1983

Mr. William Cass, Director
Division of Hazardous Waste
Department of Environmental
Quality Engineering
Commonwealth of Massachusetts
One Winter Street
Boston, MA 02108

Re: Revised Hazardous Waste Permit Application
Olin Corporation-Wilmington Plant
EPA I.D. No. MAD001403104

Dear Mr. Cass:

On November 17, 1980, Olin Corporation submitted a RCRA permit application, (i.e., Forms 1 and 3) for its Wilmington, Massachusetts plant. This original submission was revised on January 26, 1983. Today, we are revising our application in order to remove two 15,000-gallon storage tanks. These tanks were included in our original submission to store RCRA hazardous wastes. However, these tanks were never used for the storage of hazardous wastes and the need to keep these tanks available for hazardous wastes storage no longer exists. Form 3, Part III, A and B, Page 1 of 5, has been revised to delete SO2, 30,000 G,. Also on Page 5 of 5, we have removed the 30,000-gallon bulk storage area shown in the northern corner of the property. For convenience, an entire Form 3 is being submitted and should be inserted in our file. This revised application supercedes all previous submissions except to the extent that previous submissions establish timely compliance.

Thank you for your assistance in this matter and if there are any questions concerning the above changes, please contact Mr. J. W. O'Grady at 615/336-4541.

Sincerely,

OLIN CORPORATION

W. A. Oppold

WAO/JWO/vrp HBS 7/6/83

cc: U. S. Environmental Protection Agency
Region I
Permits Branch
P. O. Box 8748
Boston, MA 02114

0041-0425

OW 004706

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F M A D 0 0 1 4 0 3 1 0 4

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facilit EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

C 8 — YR. | MO. | DAY — FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

☐ 2. NEW FACILITY *(Complete item below.)*

YR. | MO. | DAY — FOR NEW FACILIT PROVIDE THE DA *(yr., mo., & day)* OP TION BEGAN OR I EXPECTED TO BE

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☒ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided f entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, tl describe the process *(including its design capacity)* in the space provided on the form *(Item III-C).*

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. *AMOUNT – Enter the amount.*
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT MEASU COD
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	/
LITERS	L	TONS PER HOUR	D	HECTARE-METER	I
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	S
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	C
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below):* A facility has two storage tanks, one tank can hold 200 gallons and other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C — DUP — T/A — C 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	17,290	G		7				
	S 0 2	10,310	G		8				
3					9				
4					10				

0041-0426

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Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, 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 column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column 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 column 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 column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III 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: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

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

EXAMPLE FOR COMPLETING ITEM IV *(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 operation. 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 NO.	A. EPA HAZARD. WASTE NO (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	0041-0427
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	OW 004708
X-4	D 0 0 2				*included with above*

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W M A D 0 0 1 4 0 3 1 0 4 — T/A C 1	W DUP T/A C 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	P105	250	P	S01	
2	U028	5000	P	S01	
3	U154	1000	P	S01	
4	D008	9	T	S01	
5	D001	15	T	S01	
6	D001	13	T	S02 S01	
7	U028				Included with above
8	D002	45	T	S02 T01	
9	M001	6700	P	S01	
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

0041-0428

OW 004709

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

F M A D 0 0 1 4 0 3 1 0 4 T/A 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

V ACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
4 2 3 1 3 4 N	0 7 1 0 9 1 5 W

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
W. A. Oppold, Sr. Vice President Manufacturing and Engineering		7/14/83

X. OPERATOR CERTIFICATION

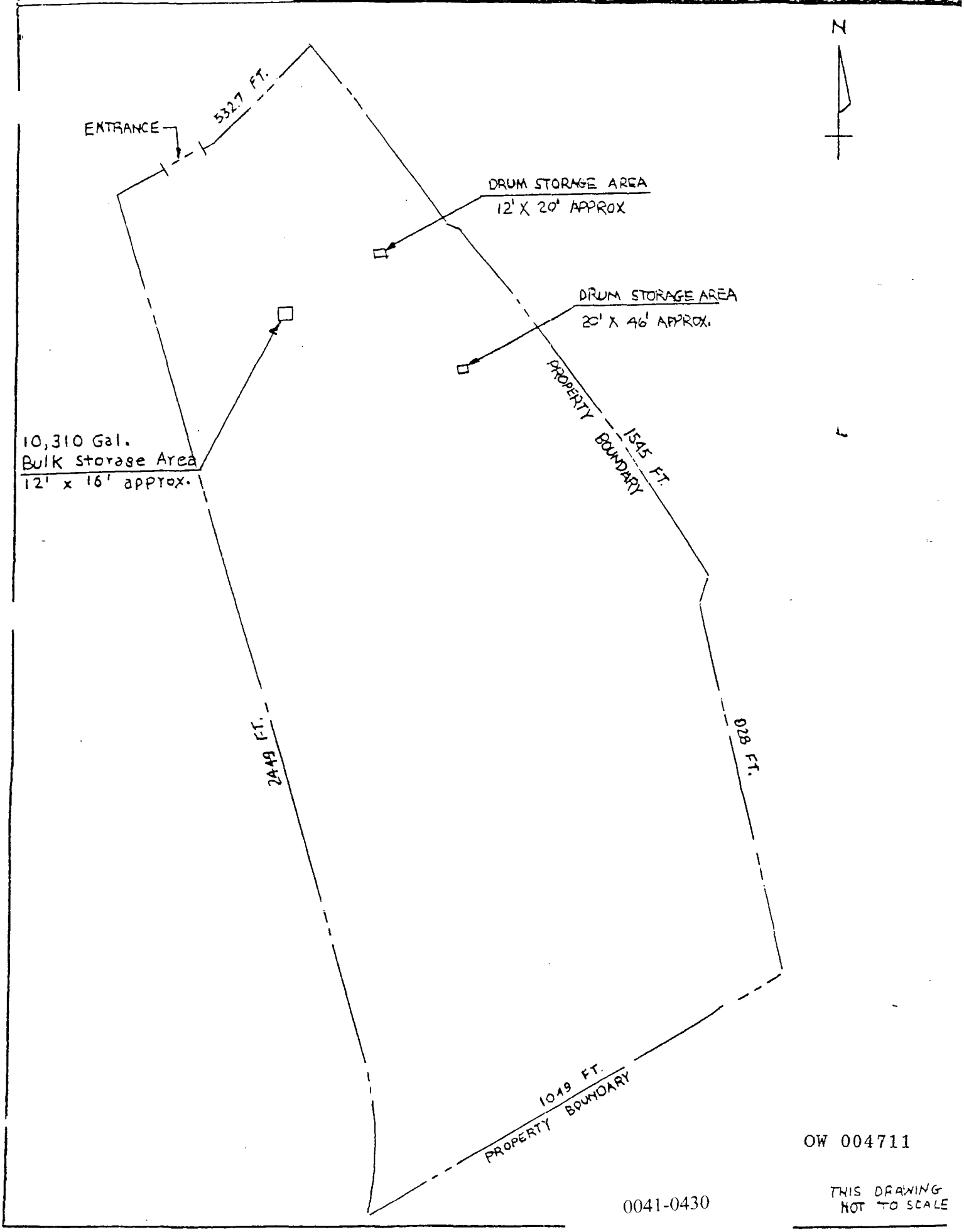
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached d ments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	DATE SIGNED

0041-0429

Continued from page 4

V. FACILITY DRAWING (see page 4)



OW 004711

0041-0430

THIS DRAWING NOT TO SCALE

AMMONIUM HYDROXIDE TANKS

0041-0431

QUESTION 1:

SWMU: Ammonium Hydroxide Tanks

b) Type of Unit: Storage Tanks

Dimensions: 15,000/15,100/8,000/10,000-gallon, all carbon steel, all diked

Information on how unit was designed, constructed, operated and maintained:

1) 15,000 gallon - Plant B tank farm, diked

2) 15,100 gallon - West of Plant C-3, out-of-service and removed

3) 8,000 gallon - Plant D tank farm, diked

4) 10,000 gallon - Treatment plant, diked

c) Date in use: 1) 1983 to present
2) Unknown to 12/83
3) 2/84 to 7/86
4) 9/82 to present

d) Quantity and Type(s) of wastes managed in unit: Ammonium hydroxide from Kempore process stored prior to being neutralized and discharged to POTW.

e) Releases of hazardous wastes or hazardous constituents: None known

f) Information, data and documentation concerning any releases: None

g) Corrective actions: None required

WASTEWATER TREATMENT SYSTEM

0041-0433

OW 004714

QUESTION 1:

SWMU: Wastewater Treatment Plant

b) Type of Unit: Treatment/Neutralization/Settling

Dimensions: System utilized 7 tanks, 1 sump and 2 settling ponds to treat process wastewater prior to discharge to POTW

Information on how unit was designed, constructed, operated and maintained: Acid stream is treated with lime and sent to one of two lagoons to allow settling of calcium sulfate sludge. Supernatant returned to clarifier and discharged to POTW. Other process streams are neutralized using HCl or ammonium hydroxide, then sent to the clarifier and discharged to POTW.

c) Date in use: 1971-current

d) Quantity and Type(s) of wastes managed in unit: Average flow 250,000 gpd, typical composition sulfates 800-1200 ppm, chlorides 350-3500, trace organics, low levels zinc, copper, cyanide. Note: Plant ceased chemical processing July 1, 1986.

e) Releases of hazardous wastes or hazardous constituents: None known, discharge to POTW.

f) Information, data and documentation concerning any releases: Unknown

g) Corrective actions: None required

QUESTION 1:

SWMU: Lagoons I and II

b) Type of Unit: Settling Pond

Dimensions: I) 195 ft. x 195 ft. x 11 ft.
II) Top 245 x 130 x 10 ft.

Information on how unit was designed, constructed, operated and maintained: Originally lined with a PVC liner in 1972. Lagoon was relined in 1981 and built to the dimensions listed above. The pond was constructed on a 1 foot layer of compacted sand, lined with a 36 mil Hypalon® liner, covered with 1 foot of compacted sandy-clay and this in turn was covered by 1 foot of 3/4" to 1½" processed gravel. Acidic (sulfuric) wastewater was lime neutralized in the treatment plant tank and discharged to lagoon for settling of calcium sulfate sludge. Supernatant was returned to the clarifier for discharge to the POTW.

c) Date in use: First put in service 1972-73

d) Quantity and Type(s) of wastes managed in unit: When Kempore process running sulfuric acid wastewater (0.05 mgd) from azodicarbonamide process treated with lime (0.02 mgd) and discharged into lagoon.

e) Releases of hazardous wastes or hazardous constituents: There have been no known releases of hazardous waste or hazardous constituents from this unit (for additional information see below).

f) Information, data and documentation concerning any releases: A four-season hydrogeologic study (see attached Hydrogeologic Investigation, Malcolm Pirnie, Inc., Appendix C) of the groundwater and the surface waters was conducted at the Wilmington plant site during 1981. The results of the study indicated that the lagoons were believed to be leaking and were potential sources of inorganic chemicals.

g) Corrective actions: Lagoons were relined in 1981 and 1983, respectively.

For more detailed information pertaining to the design, construction, operation, maintenance or regarding any possible releases prior to Olin's acquisition on September 15, 1980, please contact Stepan Chemical Company, Inc., Edens and Winnetka Roads, Winnetka, Illinois 60093-0000, (312) 446-7500.

PLANT B PIT

0041-0436

QUESTION 1:

SWMU: Plant B Pit

b) Type of Unit: Settling Tank

Dimensions: 7 ft. x 14 ft. x 11.5 ft.

Information on how unit was designed, constructed, operated and maintained: Covered concrete tank. Bottom and top 8" thick and walls 10" thick.

c) Date in use: Actual dates put in service and process utilization unknown. Existence discovered after Olin acquisition. Contents cleaned out and disposed of offsite in March 1986.

d) Quantity and Type(s) of wastes managed in unit: See attached analysis of disposal contents

e) Releases of hazardous wastes or hazardous constituents: Unknown

f) Information, data and documentation concerning any releases: Unknown

g) Corrective actions: Contents removed and tank filled with concrete

For more detailed information pertaining to the design, construction, operation, maintenance or regarding any possible releases prior to Olin's acquisition on September 15, 1980, please contact Stepan Chemical Company, Inc., Edens and Winnetka Roads, Winnetka, Illinois 60093-0000, (312) 446-7500.

Plant B Pit

E.C. JORDAN CO.

CONSULTING ENGINEERS
562 CONGRESS STREET PO BOX 7050 • PORTLAND MAINE 04112
(207) 775-5401 TELEX 94-4329

REPORT OF ANALYSIS — DATE 8/22/83
REFERENCE NUMBER 434 — PAGE 1

OLIN CHEMICAL
ATTN: JIM MARTUCCI
51 EAMES STREET
WILMINGTON MA 01887

CLIENT LAB ID	DATE RECEIVED / PARAMETER		UNITS		RESULTS
BOTTOM	7/01/83				
3182020	PH (LABORATORY)				6.
	PHENOLICS, TOTAL RECOVERABLE		MG/KG		6
	SEMI-VOLATILE BASE/NEUTRALS				
	N-NITROSODIPHENYLAMINE		MG/KG		43
	BIS(2-ETHYLHEXYL)PHTHALATE		MG/KG		3600
	EP EXTRACTION-ARSENIC		MG/L		0.0
	EP EXTRACTION-BARIUM		MG/L		0.
	EP EXTRACTION-CADMIUM		MG/L		0.0
	EP EXTRACTION-CHROMIUM		MG/L		0.0
	EP EXTRACTION-LEAD		MG/L		0.0
	EP EXTRACTION-MERCURY		UG/L	<	
	EP EXTRACTION-SELENIUM		MG/L	<	0.0
	EP EXTRACTION-SILVER		MG/L		0.0
	FLASH POINT		DEGREES F	>	2
	BRITISH THERMAL UNITS	6A	LBS		95
TOP	7/01/83				
3182021	PH (LABORATORY)				5
	PHENOLICS, TOTAL RECOVERABLE		MG/KG		1
	SEMI-VOLATILE BASE/NEUTRALS				
	N-NITROSODIPHENYLAMINE		MG/KG		20
	BIS(2-ETHYLHEXYL)PHTHALATE		MG/KG		1000
	EP EXTRACTION-ARSENIC		MG/L		0.0
	EP EXTRACTION-BARIUM		MG/L		0.
	EP EXTRACTION-CADMIUM		MG/L		0.0
	EP EXTRACTION-CHROMIUM		MG/L		0.0
	EP EXTRACTION-LEAD		MG/L		0.0
	EP EXTRACTION-MERCURY		MG/L	<	
	EP EXTRACTION-SELENIUM		MG/L	<	0.0
	EP EXTRACTION-SILVER		MG/L	<	0.0
	FLASH POINT		DEGREES F	>	2
	BRITISH THERMAL UNITS	6A	LBS		40

SIGNATURE William J Karp

REPORT TO ROBERT M BURGER
AUTHORIZATION 420700

0041-0438

OW 004719

CALCIUM SULFATE LANDFILL

0041-0439

QUESTION 1:

SWMU: Calcium Sulfate Landfill

b) Type of Unit: Landfill

Dimensions:

Information on how unit was designed, constructed, operated and maintained: See attached plan for most recent utilization (1985) and design.

c) Date in use: January 1975-1986

d) Quantity and Type(s) of wastes managed in unit: Calcium sulfate sludge and water from Lagoon I and II cleanouts. See attached for EP extract analyses. Estimate volume since 1975 75,000 cubic yards.

e) Releases of hazardous wastes or hazardous constituents: There have been no known releases of hazardous wastes or hazardous constituents from this unit

f) Information, data and documentation concerning any releases: Unknown

g) Corrective actions: Unknown

For more detailed information pertaining to the design, construction, operation, maintenance or regarding any possible releases prior to Olin's acquisition on September 15, 1980, please contact Stepan Chemical Company, Inc., Edens and Winnetka Roads, Winnetka, Illinois 60093-0000, (312) 446-7500.

Stepan Chemicals – Special Leachates

Sludge is non-hazardous

E TYPE	RUN(R) AND COMPOSITE(C) NUMBER	DATE SAMPLE COLLECTED	INITIAL SLUDGE PPM Hg	TRACE METALS IN LEACHATE - PPM												
				Hg	Ag	Ba	As	Cu	Ni	Pb	Cr	Tl	Zn	Se	Cd	Sb
limit				.2	5	100	5	–	–	5	5	–	–	1	1	–
cial leachate	R1-C1	5-5-80	.0587	.0007	.001	1.25	<.02			.3	.019			<.02	.03	
"	R2-C1	"	.069 Reanalysis	.0007 .003	.001	1.25	<.02			.15	.013					
														<.02	.023	
"	R3-C1	"	5.27 Reanalysis	.001 .003	.001	1.0	<.02			.225	.038					
														<.02	.038	
"	R4-C1	"	.0502 Reanalysis	<.0002 .003	.001	1.0	<.02			.09	.031					
														<.02	.035	

PESTICIDES – IN LEACHATE – PPM

				ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE	2-4, D	2,4,5-TP SILVEX
PA Limit				.02	.4	10	.5	10	1.0
-1 leachate	R1-C1	"		<.0001	<.0001	<.0001	<.0004	<.01	<.005
	R2-C1	"		<.0001	<.0001	<.0001	<.0004	<.01	<.005
	R3-C1	"		<.0001	<.0001	<.0001	<.0004	<.01	<.005
	R4-C1	"		<.0001	<.0001	<.0001	<.0004	<.01	<.005

0041-0441

OW 004722

RECEIVED
AUG - 5 1985
J. W. O'GRADY

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

July 30, 1985

Mr. Vartkes Karaian
Chief of Solid Waste
Department of Environmental Quality Engineering
5 Commonwealth Avenue
Woburn, Massachusetts 01801

Dear Mr. Karaian:

As discussed in a phone conversation with Mr. Jack O'Grady on July 23, 1985, Olin plans to remove the calcium sulfate in lagoon #1 and place it in our calcium sulfate landfill located at the Wilmington Plant. The calcium sulfate will be placed within the original boundaries of the landfill.

Four drawings are provided in appendices A through D. Appendix A shows the original outline of the landfill boundary. Appendix B provides the outline and elevation of the existing completed section of the landfill. Appendix C is a blow up of the completed portion and surrounding area. Appendix D details the maximum boundaries after the lagoon #1 cleanout is completed. The final completed area is difficult to determine but it will be within the boundary as defined in Appendix D. The actual completed area should be mainly concentrated at the Northwestern corner of the landfill.

The plan of work is as follows:

1. The calcium will be trucked to the landfill and placed within a soil berm.
2. All calcium sulfate will be grated to the maximum elevation of 101 feet.
3. The top of the landfill will be covered with 18" of compacted claylike soil.
4. The claylike layer will be covered with 6 inches of topsoil and seeded.
5. A finish grade of 2% slope minimum will be provided for the top of the landfill.
6. The working face of the landfill will be covered with 6" of claylike soil.
7. The claylike layer will be covered with 6" of topsoil and seeded.
8. The landfill will be surveyed after completion of the covering of this section and the drawing will be revised to show the existing grade.

We would like to start the cleanout in August with completion of the covering this year. If you have any questions or wish to visit the site. Please contact Jim Martucci at (617) 933-4240.

Sincerely,

Ronald J. McBrien

Ronald J. McBrien
Plant Manager

JFM

0041-0442

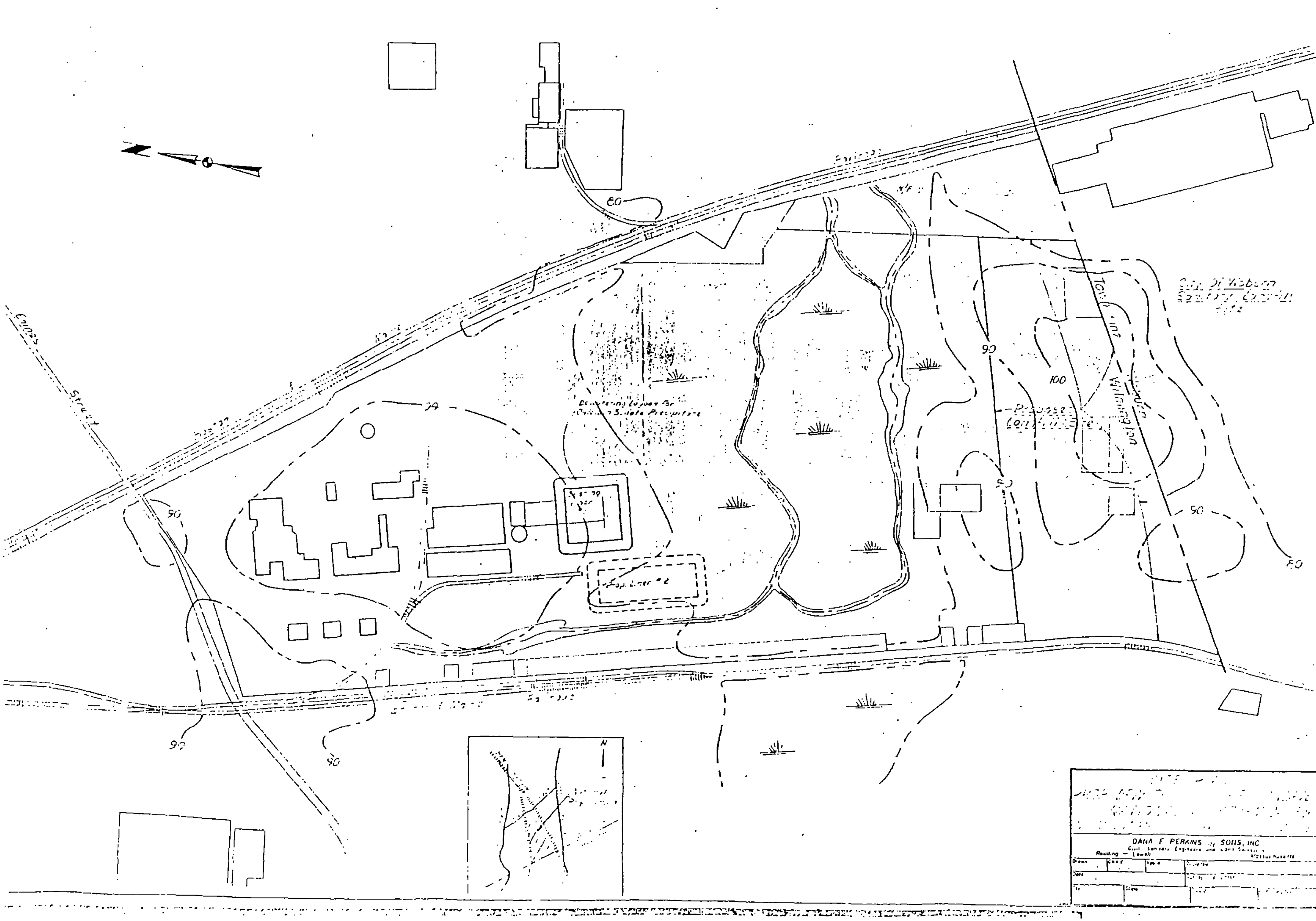
RJM/jt

APPENDIX A

SITE PLAN
PART DEWATERED [illegible] LANDFILL
NATIONAL POLYCHEMICALS Inc
WILMINGTON MASS.

DANA F. PERKINS and SONS, INC.
Civil - Sanitary Engineers and Land Surveyors
Reading — Lowell Massachusetts

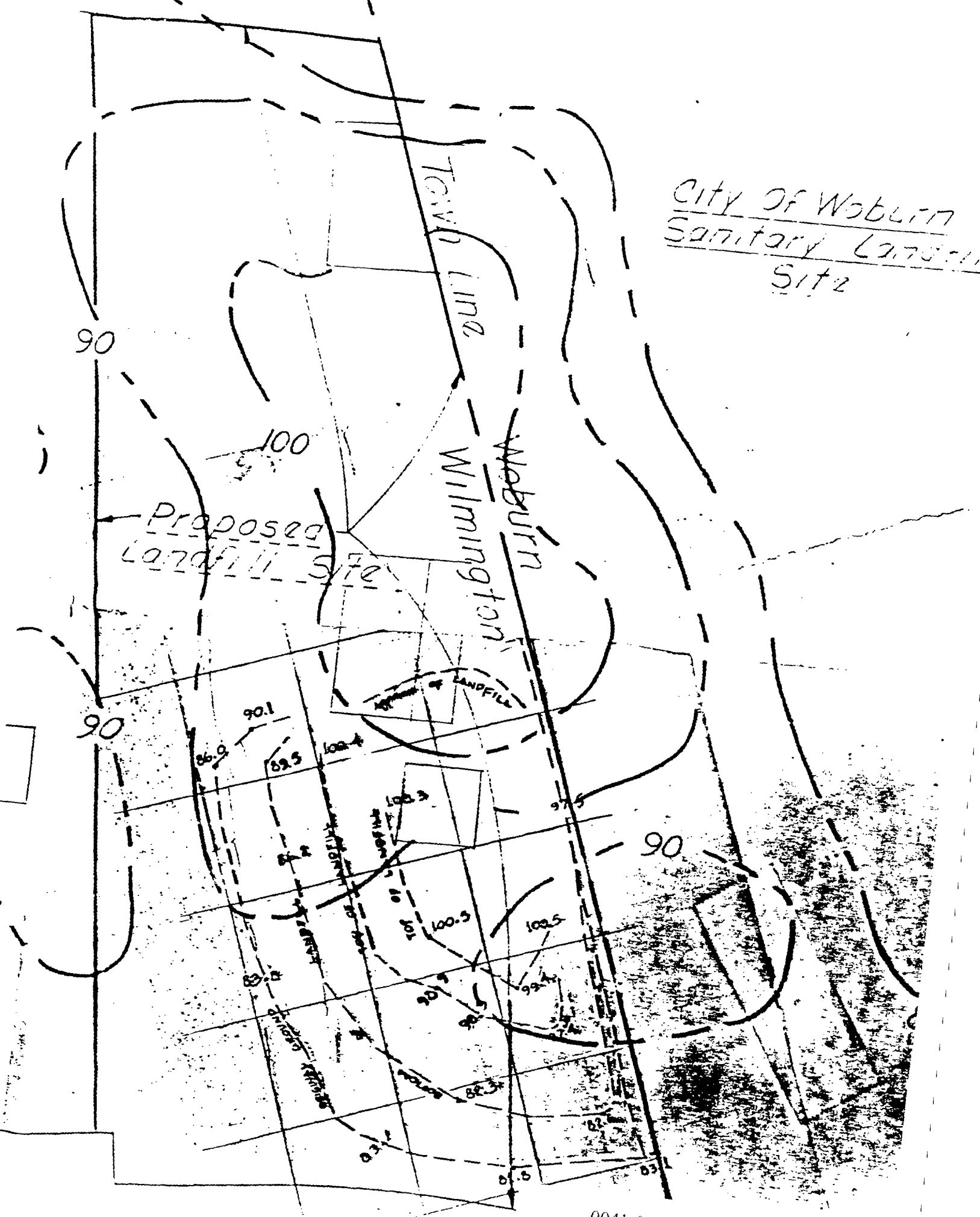
Drawn:	Ch'k'd:	App'd:	Designed:
[illegible]	[illegible]	[illegible]	[illegible]
Date: [illegible]			Surveyor - Engineer:
Div:	Scale: [illegible]	Calc'd:	File / Dwg. No. S-21355B



0041-0444

OW 004725

APPENDIX B



0041-0446

OW 004727

APPENDIX C

APPENDIX D

INTERCEPTOR WELL SYSTEM

0041-0449

QUESTION 1:

SWMU: Interceptor Well System

b) Type of Unit: Groundwater interception, storage and treatment

Dimension: Four wells approximately 20 ft. deep pumping 1-2 gpm each to 15,000-gallon separation tank and skimmer, water carbon treated prior to in-plant usage.

Information on how unit was designed, constructed, operated and maintained: See attached reports

c) Date in use: 1981 to present

d) Quantity and Type(s) of wastes managed in unit: Water contains approximately 1-2 mg/l Bis(2-ethylhexyl)phthalate and 1-2 mg/l N-Nitrosodiphenylamine. Other trace organics including diisobutylene and di-n-octylphthelate may be present.

e) Releases of hazardous wastes or hazardous constituents: None known

f) Information, data and documentation concerning any releases: None

g) Corrective actions: System was installed as a corrective action for seep along east side of property believed to have emanated from Plant B tank farm and vicinity.

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

RECEIVED
OCT 0 . 1985

September 26, 1985

Mr. Thomas F. McMahon, Director
Division of Water Polution Control
The Commonwealth of Massachusetts
1 Winter Street
Boston, Massachusetts 02108

RE: OLIN CORPORATION
Wilmington Massachusetts
Interceptor Well System Monthly Status Report

Dear Mr. McMahon:

Since modifying the Interceptor Well System on October 22, 1984. The system has operated quite effectively with the exception of some minor problems with the lines plugging or freezing.

As indicated in the attached table, the new system has provided continuous and effective drawdown on the ground-water table. Furthermore, the visible seepage along the East ditch has been eliminated. We will continue to monitor the operation of the system and make observations of the East ditch.

As discussed with Peter Dore, we will continue to keep you informed of the operation of the system, with periodic status reports. Should you have any questions concerning the operation of the Interceptor Well System. Please contact James F. Martucci at (617) 933-4240.

Sincerely,

OLIN CORPORATION

Ronald D. McBrien

Ronald D. McBrien
Plant Manager JFM

Attachement
CC: Peter Dore

0041-0451

RJM/jt

Date	IW-6 (89.03 top)	IW-7 (90.17 top)	IW-8 (89.97 top)	IW-9 (89.77 top)	JOE (89.73 top)	JOF (89.20 top)	JOD (89.95 top)
1/85	70.20	68.50	68.47	77.44*	76.06(dry)	77.53(dry)	76.28(dry)
7/85	70.70	68.34	71.30	68.60	76.06(dry)	77.53(dry)	76.28(dry)
13/85	69.61	68.84	69.97	68.60	77.06	77.53(dry)	77.45
20/85	69.86	68.67	72.05	79.77*	79.53	77.86	79.95
28/85	69.03	68.59	71.97	68.10	77.40	79.20	77.53
5/85	69.03	68.50	71.89	68.19	77.23	78.03	77.62
11/85	68.86	68.33	71.97	68.10	77.31	78.03	77.62
19/85	69.53	68.17	71.97	67.94	77.23	78.20	77.53
26/85	70.03	68.50	82.30*	68.28	78.56	77.53	77.62
3/85	70.03	68.33	72.80	68.44	78.73	77.37	79.95
10/85	70.20	68.84	69.30	68.44	77.15	77.53	77.45
15/85	70.11	70.84	68.97	68.27	77.23	77.70	77.53
23/85	70.03	70.17	69.14	68.44	77.40	77.87	77.62
31/85	71.03	68.67	77.30*	68.77	77.23	77.53	77.28
7/85	70.03	68.67	75.30*	68.28	77.40	77.53	77.45
25/85	70.03	68.50	77.30*	79.77*	77.81	77.53	77.45
14/85	70.28	69.00	70.30	78.10*	77.73	78.12	77.95

- Line Plugged

OTE: Level of wat the ditch is 77.50'

0041-0452

OW 004733

FM/jt
/26/85

To Jack O'G.

Olin CHEMICALS GROUP
51 EAMES STREET, WILMINGTON, MA 01887

RECEIVED
OCT 1984
J. W. McGRADY

October 23, 1984

Mr. Thomas C. McMahon, Director
Division of Water Pollution
Control
The Commonwealth of Massachusetts
1 Winter Street
Boston, Massachusetts 02108

RE: OLIN CORPORATION
Wilmington, Massachusetts
Interceptor Well System Monthly Status Report

Dear Mr. McMahon:

In Olin's Interceptor Well System Status Report dated July 20, 1984, it was indicated that we were in the process of modifying the system. The main reason for the modification was to install a pumping system that would provide greater mechanical reliability. The report indicated that the modifications would be completed by August 31, 1984. This was accomplished.

The purpose of this letter is to report the status of the system's operation since August 31, 1984. The system has operated effectively since installation, with the exception of start up problems experienced with the pump installed in IW-9. The problem encountered with the IW-9 pump was caused by improper installation not equipment failure and therefore is not expected to reoccur.

As indicated in the attached table, the new system has provided continuous and effective drawdown of the groundwater table. Furthermore, the visible seepage along the east ditch has been eliminated. We will continue to monitor the operation of the system and make observations of the east ditch.

0041-0453

Mr. Thomas C. McMahon, Director
October 23, 1984

As discussed with Mr. Peter Dore, we will continue to keep you informed of the operation of the system with periodic status reports. Should you have any questions concerning the operation of the interceptor well system, please contact James F. Martucci at (617)933-4240.

Sincerely,

OLIN CORPORATION

Ronald J. McBrien

Ronald J. McBrien
Plant Manager JFM

Attachment
cc: Mr. Peter Dore

JFM/rlg

0041-0454

0041-0454

DATE	IW-6 (89.03 top)	IW-7 (90.17 top)	IW-8 (89.97 top)	IW-9 (89.77 top)	JOE (89.73)	JOF (89.20)	JOD (89.95)
8/31	New peristaltic pumps operational						
9/4	70.11	68.71	68.22	68.35	76.81	77.53(dry)	77.03
9/10	70.03	68.34	68.51	77.52*	77.65	78.26	77.95
9/17	70.24	68.75	68.30	77.77*	76.19	77.74	77.53
9/24	70.03	73.50	72.47	68.60	76.15	77.53(dry)	76.95(dry)
10/3	70.11	70.00	69.80	71.60	76.15	77.53(dry)	76.95(dry)
10/9	70.19	69.00	68.72	68.60	76.06	77.53(dry)	76.95(dry)
10/15	70.19	68.92	68.64	70.10	76.23	77.53(dry)	77.12

* Pump down for repairs, IW-9 pump back in operation 9/19

NOTE: Level of water in the ditch ~77.50'

0041-0455

JFM/rlg
10-23-84

R.C.R.A. CLOSURE

Scope of Work:

Three diked, concrete storage areas and one vertical tank shall be cleaned and the tank dismantled.

Area A) Plant "B" Drum Storage concrete pad approximately 16' x 20' with 8" dike wall.

Area B) Plant "D" Drum Storage concrete pad approximately 20' x 50' with 8" dike wall.

Area C) Next to Plant "C-1" concrete pad approximately 20' x 60' with 32" dike wall.

Tank) "By Product HCl Tank" next to Plant "C-1" within "Area C".

1. Contractor shall clean areas by the methods established in the RCRA Closure Plan, attached, which includes :

    a. Water blast all concrete areas with high pressure hot water.
    b. For any remaining contamination, sandblast the concrete areas until no visible surface contamination is evident.

2. Aqueous wastes may be collected and taken to Olin sewer system/ treatment plant.

3. The fiberglass tank is empty of product. Contractor shall dismantle the tank to pieces the size which can be most economically shipped to a landfill. Contractor is advised that the tank contains some acidic sludge.

4. Final closure will be certified by a consultant engineer on the basis of the closure plan. Contractor has the responsibility of meeting requirements for certification. Consultant to be provided by Olin.

5. All solid and non-aqueous liquid wastes to be collected and placed in drums provided by Olin, for disposal by Olin.

6. Contractor to provide labor, materials, equipment, tools, safety equipment and supervison to perform and complete the work. Contractor to provide a manpower loading and work schedule.

7. Work to be started after approval of Closure Plan by government agency. Expected approval date is November 1, 1986 or later.

8. Contractor is advised to visit the site for verification of this information and to familiarize himself with the work area.

MDT/rlg
9-22-86

GYPSUM LAGOONS #1 AND #2

Basis of Work:

Landfill Plot Plan
Lagoon Plot Plan

Scope of Work:

I. Landfill Operation

Contractor shall prepare landfill to receive lagoon sludge by moving the existing earth berm around the recieving area approximately 100 feet north of the present location.

II. Lagoon Cleanouts:

1. Contractor shall remove all material from lagoon #1 down to the liner taking care not to damage the liner.

2. Contractor shall remove all material from lagoon #2 down to the liner. Contractor shall remove the liner intact, cut into a minimum number of pieces and store on site.

3. Contractor shall remove pipe rack and pipe down to grade from the clarifier to the end of the pipe rack, and shall dispose of refuse.

4. Contractor shall remove 2 wooden buildings and 2 stationary cranes for positioning pumps and dispose of refuse, all located on the north ends of the ponds.

5. Contractor shall remove liner from lagoon #1 as the final step of the cleanout, cut into a minimum number of pieces.

6. Contractor shall regrade entire area to remove projection from lagoon #1, remove the area between the lagoons and remove some of the banks of each lagoon to form one large lagoon. Contractor shall provide two feet of clean gravel fill for the one large pond.

III. Landfill Closure:

1. After a minimum of three months drying time, contractor shall mound all sludge and earth berm at the north west corner of the existing landfill, to elevations and dimensions designated by Olin surveyor.

2. The contractor shall provide an 18" clay cap, compacted to a permeability of 10^{-5} cm per sec.

3. Contractor shall provide a 6" cover of loam and shall seed the area.

NOTES:

1. Contractor to provide all necessary equipment, labor, materials tools and supervision to perform and complete the work.

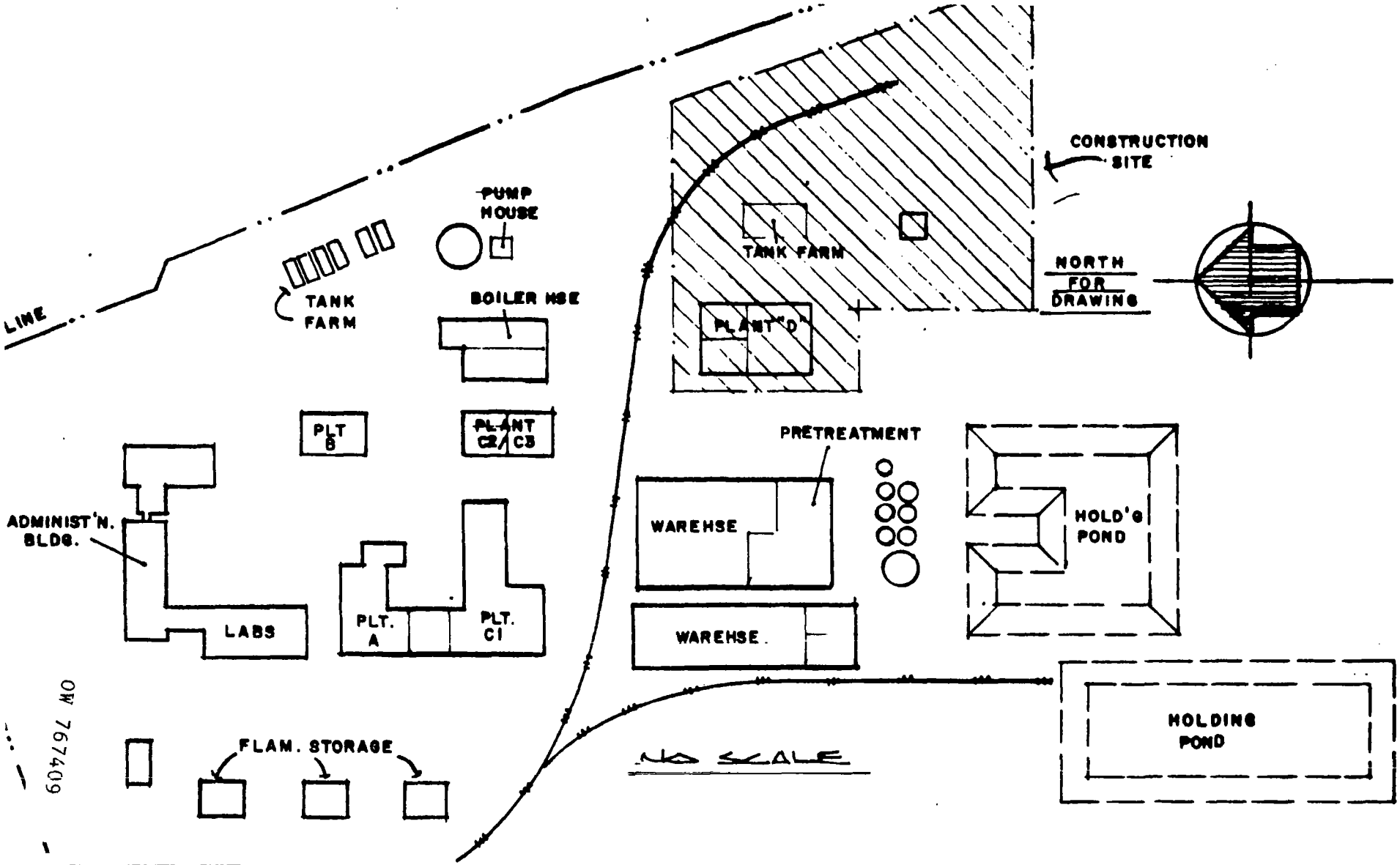
2. Contractor is advised to visit the site to insure that the information furnished is correct and sufficient, and to familiarize himself the the work area.

3. Contractor shall provide a manpower loading and work schedule estimate for a time and material type job.

4. During all operations at landfill, bales of straw shall be placed along south and west fence as a siltation barrier.

MDT/rlg
9-22-86

OW 767408



OW 767409

0041-0460

DRAWN R. DILUCA DATE APR. 27 '82 CHECKED DATE APPROVED	Olin CHEMICALS GROUP WILMINGTON, MA.		
	PROJECT NO. 82.039	SCALE NOTED	DRAWING NUMBER D.011.200	REV. A1

ASBESTOS REMOVAL

Scope of Work:

Contractor shall remove all asbestos insulation materials at the Wilmington plant, approximately 1000 feet of pipe insulation, as identified in the attached listing. Pipe insulation identified on the list has been marked with spray paint in the plant. Contractor is advised that Olin has made the required government agency notifications, a copy of which are attached, and that Contractor must follow the methods outlined in the notifications at a minimum. Contractor to place wetted asbestos materials into polyethylene bags provided by Olin and place the polyethylene bags into drums provided by Olin. Disposal of drums will be by Olin.

Notes:

1. Contractor to provide labor, equipment, tools, safety equipment, and supervision to perform and complete the work.

2. Contractor is advised to visit the site to verity information given in this scope and to familiarize himself with the work area.

3. Contractor to provide a manpower loading and work schedule, for work to begin approximately October 9, 1986.

MDT/rlg
9-22-86

Olin Corp.
51 Eames St.
Wilmington Mass.
ATT Mike Townley

Following are quantities of pipe covering that contain asbestos materials

Plant C 1
12" pipe 11 ft.
8" " 9 ft.
2" " 45 ft.

Plant B
3" pipe 45 ft.

Plant B to Boiler room

8" pipe 32 ft.
3" pipe 100 ft.
8" pipe 450 ft.

Boiler room
8" pipe 32 ft.
10" pipe 20 ft.

Boiler room to pump house
2½" pipe 50 ft.

Building C1 to C2
5" pipe 60 ft.
2" pipe 48 ft.

PlantBto plant c2
4' pipe 100 ft.

Warehouse #4
2" pipe 160 ft.

Warehouse # 5 to C2
4" pipe 160 ft.
2" pipe 25 ft.

Warehouse # 5 to C2
4" pipe 80 ft.
1½" pipe 80 ft.

Lab office
2½" pipe 90 ft.
1½" pipe 80ft.

Outside Lab B
3" pipe 80 ft.

Electric shop
3" pipe 7 ft.

Electric shop continued
1" pipe 22 ft.
1½" pipe 3 ft.

Bath Room
2" pipe 20 ft.
1½" pipe 35 ft.

Locker room
2" pipe 55 ft.
1½" pipe 35 ft.

Lunch Room
2" pipe 47 ft.
1½" pipe 50 ft.

Lab roof to plant A
5" pipe 140 ft.
4" pipe 160 ft.

Plant A to plant B
2" pipe 80 ft.
5" pipe 150 ft.
4" pipe 150 ft.

PlantD2 to warehouse
4"pipe 100 ft.

Plant D2
4" pipe 60 ft.

Pretreatment plant
4" pipe 20 ft.

Plant D1
4" pipe 160 ft.
2" pipe 160 ft.
3" pipe 160 ft.

On several pipes that are fiberglass the elbows that are on them contain asbestos approximately 100 elbows

OW 767411

Olin CHEMICALS
51 EAMES STREET, WILMINGTON, MA 01887

September 19, 1986

Regional Administrator
U. S. Environmental Protection Agency
Region 1
J. F. Kennedy Federal Building
Boston, MA 02203

Dear Sir:

In accordance with 40 CFR 61.146, we are hereby providing notice of asbestos removal.

Please contact this office if you have any questions concerning this matter.

Very truly yours,

OLIN CORPORATION

Ronald J. McBrien

Ronald J. McBrien
Plant Manager

Attachment

Copies: Town of Wilmington
Health Dept.

Carl Nelson
Michael Townley

RJM/lcm

OW 767412

NOTIFICATION OF ASBESTOS REMOVAL

Name of Operator/Owner: OLIN CORPORATION Phone: 617/933-4240

Address of Operator/Owner: 51 Eames Street, Wilmington, MA 01887

Property Owner: Same as above

Nature of Work: Demolition: X Renovating: ____ Other (specify): ____

Permit #: N/A Issuing Office: N/A

Address/Location of Work: 51 Eames Street, Wilmington, MA 01887

Description of Structure/Installation: Piping Size: Varies Age: Varies

Prior use: Steam

Amount of friable asbestos to be removed: Approximately 1,000 ft.

Start date of removal: October 9, 1986 End date: December 15, 1986

Nature of Demolition/Renovation Method to be Employed: Disassembly and wrecking

Outline Handling/Disposal Practices to be used for Asbestos: Pipe insulation will be removed prior to demolition. Material will be wet before removal, then placed wet into dust tight lined containers for disposal.

Name and Address/Location of Final Disposal Site: SCA Chemical Services (Division Chemical Waste Management) Landfill, Model City, N.Y.

Federal Regulation (Title 40 CFR, Part 61, Subpart M Section 61.147 - 61.152)
State Regulation (310 CMR DEQE, 7.15)

Return Address:

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
Division of Air Quality Control
Metropolitan Boston/Northeast Region
5 Commonwealth Avenue
Woburn, Massachusetts 01801

Telephone: 935-2160
727-5194

OW 767413

0041-0464

PROCESS TANK CLEANING

Scope of Work:

1. The following tanks will be cleaned internally and externally of existing liquids or solids to the extent that they can be disposed of to a scrap dealer.

   a. Sulfuric acid tank containing approximately 1000 gallons of 93% sulfuric acid and sludge. Contractor to designate disposal method for sulfuric acid and sludge with bid.

   b. Diphenyl oxide tank with minimal remaining liquid.

   Crush c. Nonylphenol tank with minimal remaining liquid.

   d. Wytox 312 (tris-nonylphenyl phosphite) tank with minimal remaining liquid.

2. External insulation from c and d shall be removed and placed in polyethylene bags supplies by Olin, and stored on site.

3. Contractor to provide disposal for the four (4) tanks listed above to a scrap dealer. Contractor to specify disposal method with bid.

Notes:

a. Contractor is advised to visit the site to familiarize himself with the work area.

b. Aqueous wastes may be disposed of via Olin's treatment system after approval by Olin.

c. Non-aqueous and solid wastes to be drummed in drums furnished by Olin.

d. Contractor to include a manpower loading and work schedule with bid.

e. Contractor to supply all labor, materials, equipment and supervision to complete the work.

f. All methods of disposal and disposal sites are subject to Olin's approval.

MDT/rlg
9-23-86

OW 767414

PROCESS SEWER SYSTEM

Basis of Work: Olin Drawing D.005.200 Revision P. 7/83
Sewer Layout
General Plot Plan

Scope of Work:

1. Existing process sewer lines and trenches as shown on the above drawing along with trenches (not shown) located within existing plant buildings are to be cleaned of all residue and other obstructions including building drains, catch basins and manholes.

2. Buildings "A" and "B" are to be demolished, however their process sewer systems are included in the proposed scope of work.

3. Materials are to be removed from catch basins and manholes and stored in drums provided by Olin. Stored material to be dewatered of all standing water (supernatant liquid) after settling. Drums to be labled, collected and placed in a storage compound area to be designated by Olin. Disposal of drums will be by Olin.

4. Final cleaning and flushing of the sewer system will end at the treatment plant sump. The cleaning and removal of materials from the treatment plant sump is also included in this scope of work.

5. Contractor to provide all necessary labor, equipment, materials, tools and supervision required to perform and complete the scope of work.

6. Contractor to advise Olin how and by what method he will perform the scope of work and any requirements to be provided by Olin.

7. Contractor's bid shall also include a manpower loading and work schedule.

8. Contractor is responsible for cleaning the complete system and is advised to visit the site to insure that the information furnished is complete and to familiarize himself with the work area.

rlg
9-23-86

OW 767415

DEMOLITION BUILDINGS "A AND "B"

Scope of Work: Two process buildings designated "A" and "B" on attached plot plans are to be demolished to grade level.

SEE ATTACHED

1) Contractor shall disconnect, remove without damage, and store in a designated on-site area selected pieces of process equipment as follows:

   a. Plant A

      Refrigeration unit including entire skid mounted unit, plus roof top cooling tower and two stainless steel heat exchanges in the building.

   b. Plant B

      i) 3000 gallon stainless steel reactor with agitator

      ii) Vertical stainless steel storage tank southeast corner of building,outside.

2) Olin will shut off water, steam, and electricity to the buildings prior to entry by contractor.

3) Contractor will disconnect any appurtenances that enter the building between the building and the nearest support structure. Olin representative will verify that line is dead prior to contractor breaking piping.

4) Contractor is advised to visit the site to familiarize himself with the work area.

5) Contractor to furnish labor, equipment, materials, tools, and supervision to accomplish scope of work.

6) Contractor to provide work schedule and manpower loading schedule with bid.

OW 767416

ATTACHMENT

Plant "A": Approximately 120' L x 30' W x 20' H with anteroom 30' L x 40' W. Construction is of steel beam structure with some concrete block wall and some transite siding, transite and steel roofing. Some wood stud walls also included. All transite to be placed in storage area or dumpster provided by Olin for disposal by Olin, in good, unbroken condition. All contaminated building materials and equipment to be placed in storage area for disposal by Olin (contamination determined by Olin). All other building materials to be disposed of by contractor. Room on east end to be demolished level with the floor in the main room. Two trailers west of building to be the responsibility of the contractor for disposal. Two tanks nearest the building on the south side (one rectangular and one vertical cylinder) to be responsibility of contractor. Horizontal tank west of the building to remain intact, wall common to Plant "A" and Plant C-1 (to the south) to remain intact. Tank on east end of building to be the responsibility of the contractor.

Plant "B": Approximately 60' L x 40' W x 50' H. Construction is of steel beam structure with concrete block wall and transite siding. All transite siding to be placed in storage area or dumpster provided by Olin for disposal by Olin, in good, unbroken condition. All contaminated building materials and equipment to be placed in storage area for disposal by Olin (contamination determined by Olin). All other building materials to be disposed of by contractor. Demolition to include entire building, cooling tower east of building, which is to be backfilled to grade, concrete foundations east of building but west of service driveway, and tank, pump, and foundations in the curbed area south of the building.

Follow Federal Asbestos removal
40 CFR Part 61

OW 767417

tmp

GATELY RELEASE ORDER
→ E.C. JORDAN

10/1/86 9:Am

J. Pryor M.D. Townley R. McBrien
J. Seufass T. Backhaus C. Nelson

1. Hazcom Training
2. G. Schade to prepare checklist of contractor orientation that includes Hazcom for contractors. MDT to do all contractors even if they have been done for plant purposes before.
3. Submit plan & drawing to DEQE by Tues 10/7. — CN
4. E.C. Jordan contract questions & costs. Sole Source
5. Schedule for next two months
6. Boots, gloves protective equip for final contractor. Perhaps respirator.
7. Trace of ammonia odor
8. Need to have repair kit for repairing holes in liners.
9. Excavation permit. Need Draeger tube test for Ammonia Vapors.
10. Check H_2O table.
11. Communications @ remote locations
12. Clance of other materials in lagoon.
13. Slippery roadway
14. Bales of hay on roadside.

Asbestos Removal

1. Who does disposal?
2. Piping to be depressurized (no thermal problem)
3. Need to do final approval on clean-up after contractor is done.
→ OHMET to advise.
4. High Work requirements - Inspect Lifts & Scaffolds Use lifelines
5. Asbestos labels for drums
6. HAZcom Training No Safety equipment
7. Make sure Olin people do not go in areas

OW 767418

0041-0469

GYPSUM LAGOONS #1 AND #2

Basis of Work:

Landfill Plot Plan
Lagoon Plot Plan

Scope of Work:

I. Landfill Operation

Contractor shall prepare landfill to receive lagoon sludge by moving the existing earth berm around the recieving area approximately 100 feet north of the present location.

II. Lagoon Cleanouts:

1. Contractor shall remove all material from lagoon #1 down to the liner taking care not to damage the liner.

2. Contractor shall remove all material from lagoon #2 down to the liner. Contractor shall remove the liner intact, cut into a minimum number of pieces and store on site.

3. Contractor shall remove pipe rack and pipe down to grade from the clarifier to the end of the pipe rack, and shall dispose of refuse.

4. Contractor shall remove 2 wooden buildings and 2 stationary cranes for positioning pumps and dispose of refuse, all located on the north ends of the ponds.

5. Contractor shall remove liner from lagoon #1 as the final step of the cleanout, cut into a minimum number of pieces.

6. Contractor shall regrade entire area to remove projection from lagoon #1, remove the area between the lagoons and remove some of the banks of each lagoon to form one large lagoon. Contractor shall provide two feet of clean gravel fill for the one large pond.

III. Landfill Closure:

1. After a minimum of three months drying time, contractor shall mound all sludge and earth berm at the north west corner of the existing landfill, to elevations and dimensions designated by Olin surveyor.

2. The contractor shall provide an 18" clay cap, compacted to a permeability of 10^{-5} cm per sec.

3. Contractor shall provide a 6" cover of loam and shall seed the area.

NOTES:

1. Contractor to provide all necessary equipment, labor, materials tools and supervision to perform and complete the work.

2. Contractor is advised to visit the site to insure that the information furnished is correct and sufficient, and to familiarize himself the the work area.

3. Contractor shall provide a manpower loading and work schedule estimate for a time and material type job.

4. During all operations at landfill, bales of straw shall be placed along south and west fence as a siltation barrier.

MDT/rlg
9-22-86

LANDFILL

Scope of Work:

Existing uncapped landfill area along the east/west fence shall be moved so that no part of the final capped landfill is within 100 feet of the south fence. Other uncapped landfill to be moved south so that all moved material shall form a mound equal in height to the existing capped and seeded mound. This newly formed mound shall be capped with 18" of clay, compacted to a permeability of 10^{-5} cm/sec., 16" of topsoil and seeded. The exisitng east/west earth berm shall also be moved 100 feet north to enclose this new mound. Straw bales shall be placed along the fence south and west as a siltation barrier.

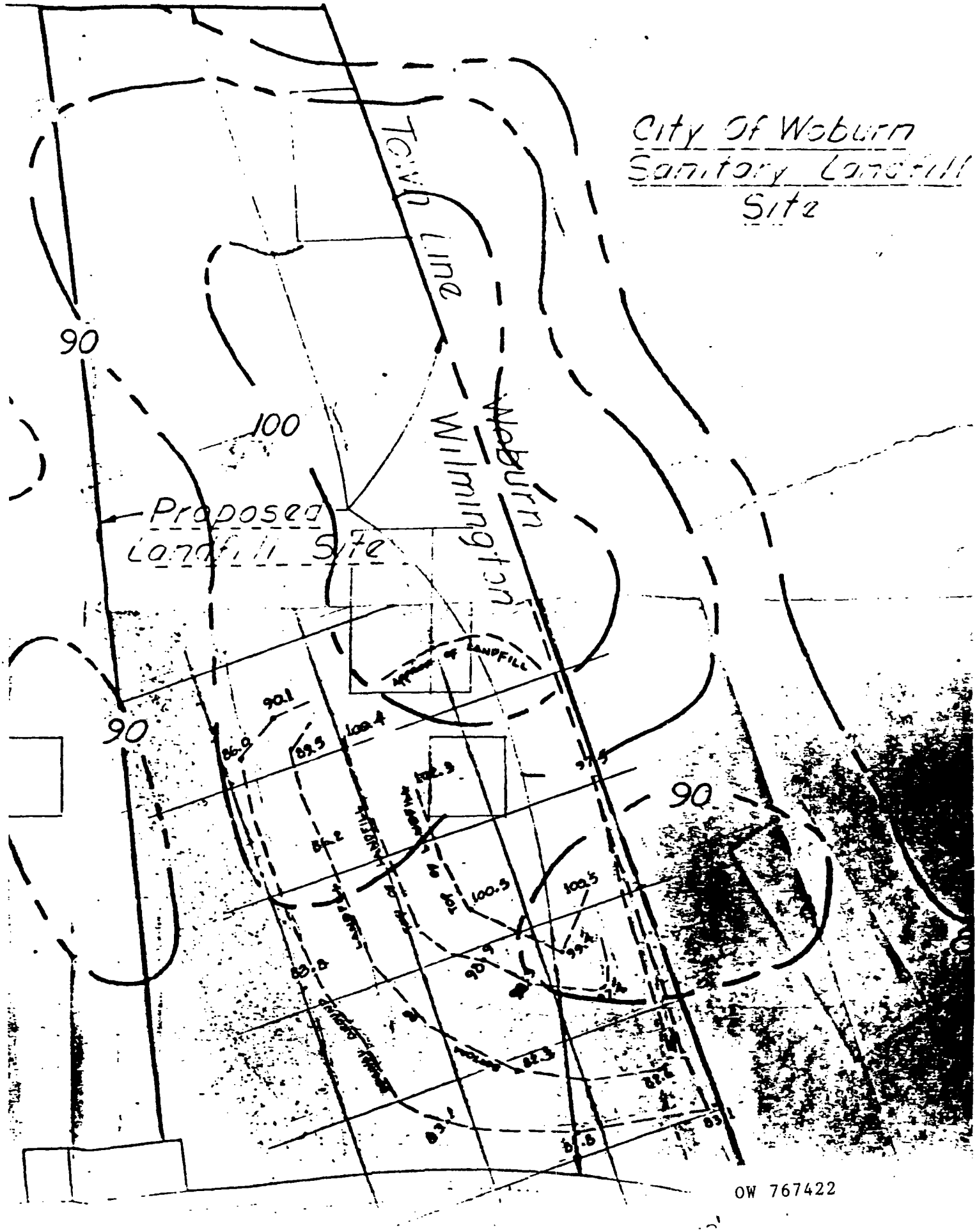
1. Contractor to provide all necessary labor, equipment, materials, tools and supervision required to perform and complete the scope of work.

2. Contractor's bid shall also include a manpower loading and work schedule.

3. Contractor is advised to visit the site to insure that the information furnished is correct and to familiarize himself with the work area.

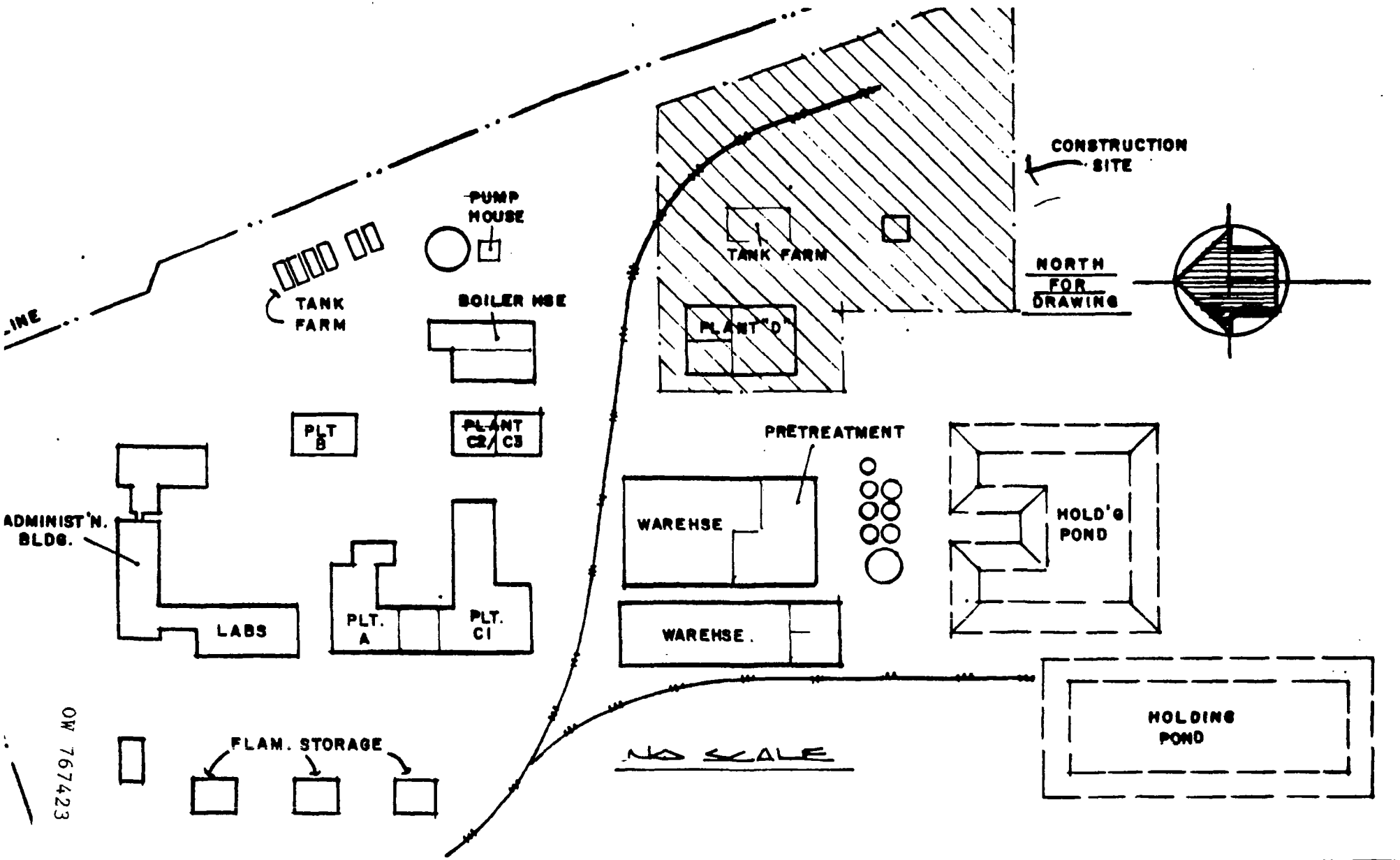
MDT/rlg
9-22-86

OW 767421



OW 767422

0041-0473



DRAWN R. GLUCA
DATE APR. 27 '82
CHECKED
DATE
APPROVED

Olin
CHEMICALS GROUP
WILMINGTON, MA.

PROJECT NO. | SCALE | DRAWING NUMBER | REV.

OW 767423

0041-0474

ASBESTOS REMOVAL

Scope of Work:

Contractor shall remove all asbestos insulation materials at the Wilmington plant, approximately 1000 feet of pipe insulation, as identified in the attached listing. Pipe insulation identified on the list has been marked with spray paint in the plant. Contractor is advised that Olin has made the required government agency notifications, a copy of which are attached, and that Contractor must follow the methods outlined in the notifications at a minimum. Contractor to place wetted asbestos materials into polyethylene bags provided by Olin and place the polyethylene bags into drums provided by Olin. Disposal of drums will be by Olin.

Notes:

1. Contractor to provide labor, equipment, tools, safety equipment, and supervision to perform and complete the work.

2. Contractor is advised to visit the site to verity information given in this scope and to familiarize himself with the work area.

3. Contractor to provide a manpower loading and work schedule, for work to begin approximately October 9, 1986.

MDT/rlg
9-22-86

Olin Corp.
51 Eames St.
Wilmington Mass.
ATT Mike Townley

Following are quantities of pipe covering that contain asbestos materials

Plant C 1
12" pipe 11 ft.
8" " 9 ft.
2" " 45 ft.

Plant B
3" pipe 45 ft.

Plant B to Boiler room

8" pipe 32 ft.
3" pipe 100 ft.
8" pipe 450 ft.

Boiler room
8" pipe 32 ft.
10" pipe 20 ft.

Boiler room to pump house
2½" pipe 50 ft.

Building C1 to C2
5" pipe 60 ft.
2" pipe 48 ft.

PlantBto plant c2
4' pipe 100 ft.

Warehouse #4
2" pipe 160 ft.

Warehouse # 5 to C2
4" pipe 160 ft.
2" pipe 25 ft.

Warehouse # 5 to C2
4" pipe 80 ft.
1½" pipe 80 ft.

Lab office
2½" pipe 90 ft.
1½" pipe 80ft.

Outside Lab B
3" pipe 80 ft.

Electric shop
3" pipe 7 ft.

Electric shop continued
1" pipe 22 ft.
1½" pipe 3 ft.

Bath Room
2" pipe 20 ft.
1½" pipe 35 ft.

Locker room
2" pipe 55 ft.
1½" pipe 35 ft.

Lunch Room
2" pipe 47 ft.
1½" pipe 50 ft.

Lab roof to plant A
5" pipe 140 ft.
4" pipe 160 ft.

Plant A to plant B
2" pipe 80 ft.
5" pipe 150 ft.
4" pipe 150 ft.

PlantD2 to warehouse
4"pipe 100 ft.

Plant D2
4" pipe 60 ft.

Pretreatment plant
4" pipe 20 ft.

Plant D1
4" pipe 160 ft.
2" pipe 160 ft.
3" pipe 160 ft.

On several pipes that are fiberglass the elbows that are on them contain asbestos approximately 100 elbows

0041-0476

OW 767425

Olin CHEMICALS
51 EAMES STREET, WILMINGTON, MA 01887

September 19, 1986

Regional Administrator
U. S. Environmental Protection Agency
Region 1
J. F. Kennedy Federal Building
Boston, MA 02203

Dear Sir:

In accordance with 40 CFR 61.146, we are hereby providing notice of asbestos removal.

Please contact this office if you have any questions concerning this matter.

Very truly yours,

OLIN CORPORATION

Ronald J. McBrien

Ronald J. McBrien
Plant Manager

Attachment

Copies: Town of Wilmington
Health Dept.

Carl Nelson
Michael Townley

0041-0477

RJM/lcm

OW 767426

NOTIFICATION OF ASBESTOS REMOVAL

Name of Operator/Owner: OLIN CORPORATION Phone: 617/933-4240

Address of Operator/Owner: 51 Eames Street, Wilmington, MA 01887

Property Owner: Same as above

Nature of Work: Demolition: X Renovating: ____ Other (specify): ____

Permit #: N/A Issuing Office: N/A

Address/Location of Work: 51 Eames Street, Wilmington, MA 01887

Description of Structure/Installation: Piping Size: Varies Age: Varies

Prior use: Steam

Amount of friable asbestos to be removed: Approximately 1,000 ft.

Start date of removal: October 9, 1986 End date: December 15, 1986

Nature of Demolition/Renovation Method to be Employed: Disassembly and wrecking

Outline Handling/Disposal Practices to be used for Asbestos: Pipe insulation will be removed prior to demolition. Material will be wet before removal, then placed wet into dust tight lined containers for disposal.

Name and Address/Location of Final Disposal Site: SCA Chemical Services (Division Chemical Waste Management) Landfill, Model City, N.Y.

Federal Regulation (Title 40 CFR, Part 61, Subpart M Section 61.147 - 61.152)
State Regulation (310 CMR DEQE, 7.15)

Return Address:

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
Division of Air Quality Control
Metropolitan Boston/Northeast Region
5 Commonwealth Avenue
Woburn, Massachusetts 01801

Telephone: 935-2160
727-5194

0041-0478

OW 767427

R.C.R.A. CLOSURE

Scope of Work:

Three diked, concrete storage areas and one vertical tank shall be cleaned and the tank dismantled.

Area A) Plant "B" Drum Storage concrete pad approximately 16' x 20' with 8" dike wall.

Area B) Plant "D" Drum Storage concrete pad approximately 20' x 50' with 8" dike wall.

Area C) Next to Plant "C-1" concrete pad approximately 20' x 60' with 32" dike wall.

Tank) "By Product HCl Tank" next to Plant "C-1" within "Area C".

1. Contractor shall clean areas by the methods established in the RCRA Closure Plan, attached, which includes :

    a. Water blast all concrete areas with high pressure hot water.
    b. For any remaining contamination, sandblast the concrete areas until no visible surface contamination is evident.

2. Aqueous wastes may be collected and taken to Olin sewer system/ treatment plant.

3. The fiberglass tank is empty of product. Contractor shall dismantle the tank to pieces the size which can be most economically shipped to a landfill. Contractor is advised that the tank contains some acidic sludge.

4. Final closure will be certified by a consultant engineer on the basis of the closure plan. Contractor has the responsibility of meeting requirements for certification. Consultant to be provided by Olin.

5. All solid and non-aqueous liquid wastes to be collected and placed in drums provided by Olin, for disposal by Olin.

6. Contractor to provide labor, materials, equipment, tools, safety equipment and supervison to perform and complete the work. Contractor to provide a manpower loading and work schedule.

7. Work to be started after approval of Closure Plan by government agency. Expected approval date is November 1, 1986 or later.

8. Contractor is advised to visit the site for verification of this information and to familiarize himself with the work area.

MDT/rlg
9-22-86

PROCESS TANK CLEANING

Scope of Work:

1. The following tanks will be cleaned internally and externally of existing liquids or solids to the extent that they can be disposed of to a scrap dealer.

   a. Sulfuric acid tank containing approximately 1000 gallons of 93% sulfuric acid and sludge. Contractor to designate disposal method for sulfuric acid and sludge with bid.

   b. Diphenyl oxide tank with minimal remaining liquid.

   c. Nonylphenol tank with minimal remaining liquid.

   d. Wytox 312 (tris-nonylphenyl phosphite) tank with minimal remaining liquid.

2. External insulation from c and d shall be removed and placed in polyethylene bags supplies by Olin, and stored on site.

3. Contractor to provide disposal for the four (4) tanks listed above to a scrap dealer. Contractor to specify disposal method with bid.

Notes:

a. Contractor is advised to visit the site to familiarize himself with the work area.

b. Aqueous wastes may be disposed of via Olin's treatment system after approval by Olin.

c. Non-aqueous and solid wastes to be drummed in drums furnished by Olin.

d. Contractor to include a manpower loading and work schedule with bid.

e. Contractor to supply all labor, materials, equipment and supervision to complete the work.

f. All methods of disposal and disposal sites are subject to Olin's approval.

MDT/rlg
9-23-86

PROCESS SEWER SYSTEM

Basis of Work: Olin Drawing D.005.200 Revision P. 7/83
Sewer Layout
General Plot Plan

Scope of Work:

1. Existing process sewer lines and trenches as shown on the above drawing along with trenches (not shown) located within existing plant buildings are to be cleaned of all residue and other obstructions including building drains, catch basins and manholes.

2. Buildings "A" and "B" are to be demolished, however their process sewer systems are included in the proposed scope of work.

3. Materials are to be removed from catch basins and manholes and stored in drums provided by Olin. Stored material to be dewatered of all standing water (supernatant liquid) after settling. Drums to be labled, collected and placed in a storage compound area to be designated by Olin. Disposal of drums will be by Olin.

4. Final cleaning and flushing of the sewer system will end at the treatment plant sump. The cleaning and removal of materials from the treatment plant sump is also included in this scope of work.

5. Contractor to provide all necessary labor, equipment, materials, tools and supervision required to perform and complete the scope of work.

6. Contractor to advise Olin how and by what method he will perform the scope of work and any requirements to be provided by Olin.

7. Contractor's bid shall also include a manpower loading and work schedule.

8. Contractor is responsible for cleaning the complete system and is advised to visit the site to insure that the information furnished is complete and to familiarize himself with the work area.

rlg
9-23-86

GYPSUM LAGOONS #1 AND #2

Basis of Work:

Landfill Plot Plan
Lagoon Plot Plan

Scope of Work:

I. Landfill Operation

Contractor shall prepare landfill to receive lagoon sludge by moving the existing earth berm around the recieving area approximately 100 feet north of the present location.

II. Lagoon Cleanouts:

1. Contractor shall remove all material from lagoon #1 down to the liner taking care not to damage the liner.

2. Contractor shall remove all material from lagoon #2 down to the liner. Contractor shall remove the liner intact, cut into a minimum number of pieces and store on site.

3. Contractor shall remove pipe rack and pipe down to grade from the clarifier to the end of the pipe rack, and shall dispose of refuse.

4. Contractor shall remove 2 wooden buildings and 2 stationary cranes for positioning pumps and dispose of refuse, all located on the north ends of the ponds.

5. Contractor shall remove liner from lagoon #1 as the final step of the cleanout, cut into a minimum number of pieces.

6. Contractor shall regrade entire area to remove projection from lagoon #1, remove the area between the lagoons and remove some of the banks of each lagoon to form one large lagoon. Contractor shall provide two feet of clean gravel fill for the one large pond.

III. Landfill Closure:

1. After a minimum of three months drying time, contractor shall mound all sludge and earth berm at the north west corner of the existing landfill, to elevations and dimensions designated by Olin surveyor.

2. The contractor shall provide an 18" clay cap, compacted to a permeability of 10^{-5} cm per sec.

3. Contractor shall provide a 6" cover of loam and shall seed the area.

0041-0483

NOTES:

1. Contractor to provide all necessary equipment, labor, materials tools and supervision to perform and complete the work.

2. Contractor is advised to visit the site to insure that the information furnished is correct and sufficient, and to familiarize himself the the work area.

3. Contractor shall provide a manpower loading and work schedule estimate for a time and material type job.

4. During all operations at landfill, bales of straw shall be placed along south and west fence as a siltation barrier.

MDT/rlg
9-22-86

LANDFILL

Scope of Work:

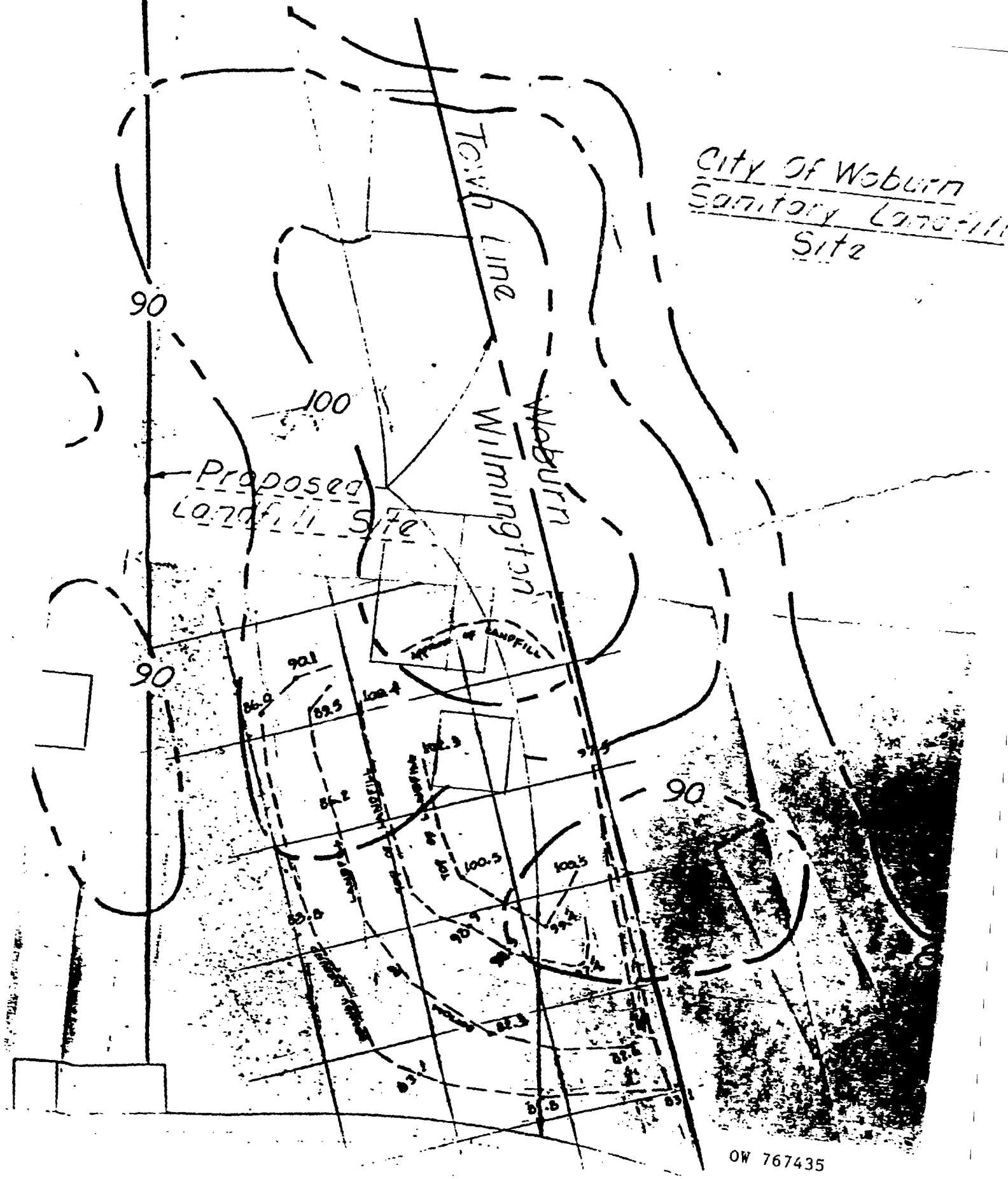
Existing uncapped landfill area along the east/west fence shall be moved so that no part of the final capped landfill is within 100 feet of the south fence. Other uncapped landfill to be moved south so that all moved material shall form a mound equal in height to the existing capped and seeded mound. This newly formed mound shall be capped with 18" of clay, compacted to a permeability of 10^{-5} cm/sec., 16" of topsoil and seeded. The exisitng east/west earth berm shall also be moved 100 feet north to enclose this new mound. Straw bales shall be placed along the fence south and west as a siltation barrier.

1. Contractor to provide all necessary labor, equipment, materials, tools and supervision required to perform and complete the scope of work.

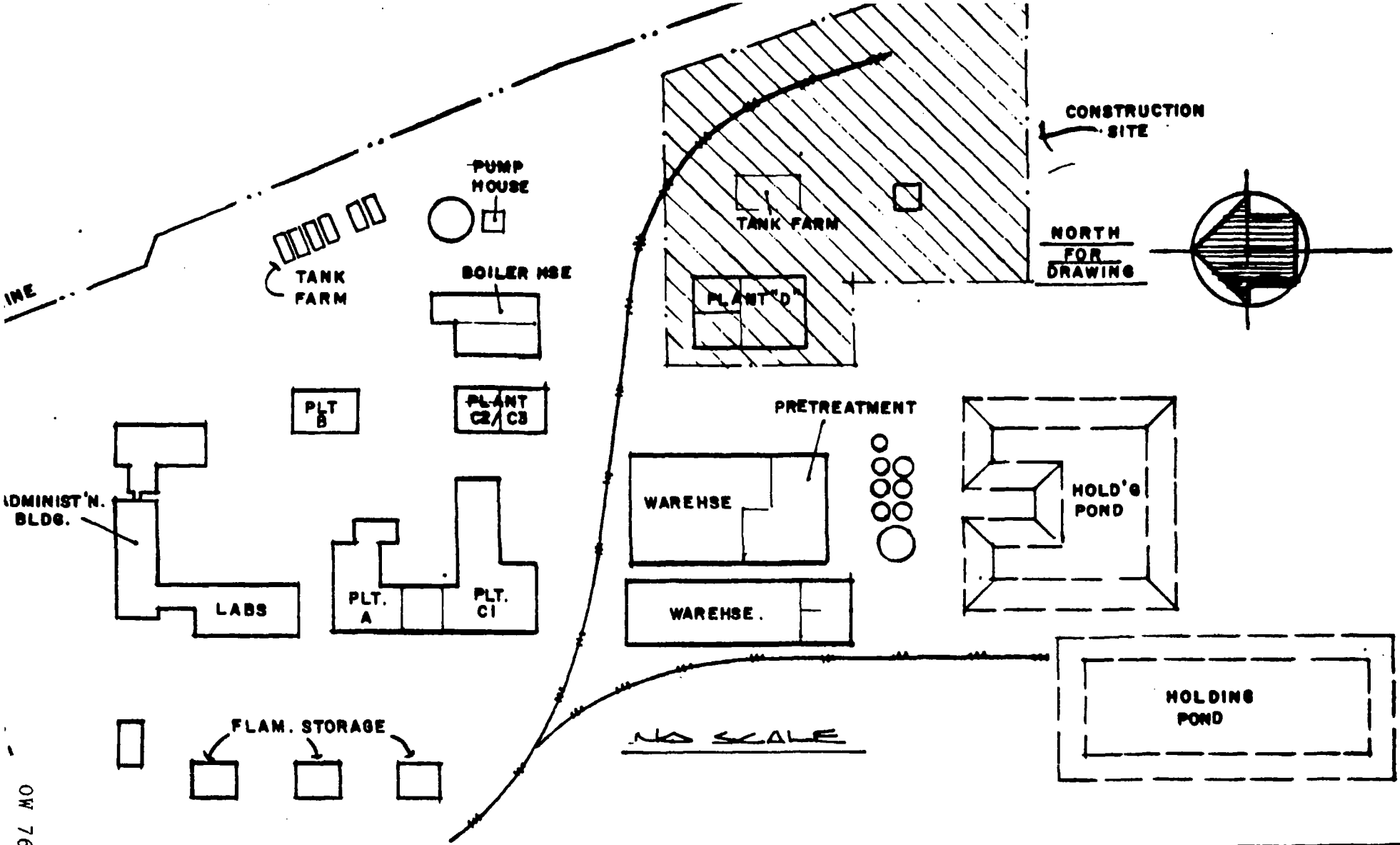
2. Contractor's bid shall also include a manpower loading and work schedule.

3. Contractor is advised to visit the site to insure that the information furnished is correct and to familiarize himself with the work area.

MDT/rlg
9-22-86


City Of Woburn
Sanitary Landfill
Site
Town Line
Woburn
Wilmington
Proposed
Landfill Site
90
100
90
90
90.1
86.0
89.5
100.4
102.3
97.5
86.2
100.5
100.5
83.8
82.3
82.6
83.1
83.8
83.1

OW 767435



DRAWN R. DILUCA DATE APR. 27 '82	Olin CHEMICALS GROUP WILMINGTON, MA.		
CHECKED DATE			
APPROVED			
	PROJECT NO. 82.039	SCALE NOTED	DRAWING NUMBER D-011-200	REV. P1

OW 7674: 0041-0487

ASBESTOS REMOVAL

Scope of Work:

Contractor shall remove all asbestos insulation materials at the Wilmington plant, approximately 1000 feet of pipe insulation, as identified in the attached listing. Pipe insulation identified on the list has been marked with spray paint in the plant. Contractor is advised that Olin has made the required government agency notifications, a copy of which are attached, and that Contractor must follow the methods outlined in the notifications at a minimum. Contractor to place wetted asbestos materials into polyethylene bags provided by Olin and place the polyethylene bags into drums provided by Olin. Disposal of drums will be by Olin.

Notes:

1. Contractor to provide labor, equipment, tools, safety equipment, and supervision to perform and complete the work.

2. Contractor is advised to visit the site to verity information given in this scope and to familiarize himself with the work area.

3. Contractor to provide a manpower loading and work schedule, for work to begin approximately October 9, 1986.

MDT/rlg
9-22-86

Olin Corp.
51 Eames St.
Wilmington Mass.
ATT Mike Townley

Following are quantities of pipe covering that contain asbestos materials

Plant C 1
12" pipe 11 ft.
8" " 9 ft.
2" " 45 ft.

Plant B
3" pipe 45 ft.

Plant B to Boiler room

8" pipe 32 ft.
3" pipe 100 ft.
8" pipe 450 ft.

Boiler room
8" pipe 32 ft.
10" pipe 20 ft.

Boiler room to pump house
2½" pipe 50 ft.

Building C1 to C2
5" pipe 60 ft.
2" pipe 48 ft.

PlantBto plant c2
4' pipe 100 ft.

Warehouse #4
2" pipe 160 ft.

Warehouse # 5 to C2
4" pipe 160 ft.
2" pipe 25 ft.

Warehouse # 5 to C2
4" pipe 80 ft.
1½" pipe 80 ft.

Lab office
2½" pipe 90 ft.
1½" pipe 80ft.

Outside Lab B
3" pipe 80 ft.

Electric shop
3" pipe 7 ft.

Electric shop continued
1" pipe 22 ft.
1½" pipe 3 ft.

Bath Room
2" pipe 20 ft.
1½" pipe 35 ft.

Locker room
2" pipe 55 ft.
1½" pipe 35 ft.

Lunch Room
2" pipe 47 ft.
1½" pipe 50 ft.

Lab roof to plant A
5" pipe 140 ft.
4" pipe 160 ft.

Plant A to plant B
2" pipe 80 ft.
5" pipe 150 ft.
4" pipe 150 ft.

PlantD2 to warehouse
4"pipe 100 ft.

Plant D2
4" pipe 60 ft.

Pretreatment plant
4" pipe 20 ft.

Plant D1
4" pipe 160 ft.
2" pipe 160 ft.
3" pipe 160 ft.

On several pipes that are fiberglass the elbows that are on them contain asbestos approximately 100 elbows

OW 767438

Olin CHEMICALS
51 EAMES STREET, WILMINGTON, MA 01887

September 19, 1986

Regional Administrator
U. S. Environmental Protection Agency
Region 1
J. F. Kennedy Federal Building
Boston, MA 02203

Dear Sir:

In accordance with 40 CFR 61.146, we are hereby providing notice of asbestos removal.

Please contact this office if you have any questions concerning this matter.

Very truly yours,

OLIN CORPORATION

Ronald J. McBrien

Ronald J. McBrien
Plant Manager

Attachment

Copies: Town of Wilmington
Health Dept.

Carl Nelson
Michael Townley

0041-0490

RJM/lcm

NOTIFICATION OF ASBESTOS REMOVAL

Name of Operator/Owner: OLIN CORPORATION Phone: 617/933-4240

Address of Operator/Owner: 51 Eames Street, Wilmington, MA 01887

Property Owner: Same as above

Nature of Work: Demolition: X Renovating: ____ Other (specify): ____

Permit #: N/A Issuing Office: N/A

Address/Location of Work: 51 Eames Street, Wilmington, MA 01887

Description of Structure/Installation: Piping Size: Varies Age: Varies

Prior use: Steam

Amount of friable asbestos to be removed: Approximately 1,000 ft.

Start date of removal: October 9, 1986 End date: December 15, 1986

Nature of Demolition/Renovation Method to be Employed: Disassembly and wrecking

Outline Handling/Disposal Practices to be used for Asbestos: Pipe insulation will be removed prior to demolition. Material will be wet before removal, then placed wet into dust tight lined containers for disposal.

Name and Address/Location of Final Disposal Site: SCA Chemical Services (Division Chemical Waste Management) Landfill, Model City, N.Y.

Federal Regulation (Title 40 CFR, Part 61, Subpart M Section 61.147 - 61.152)
State Regulation (310 CMR DEQE, 7.15)

Return Address:

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
Division of Air Quality Control
Metropolitan Boston/Northeast Region
5 Commonwealth Avenue
Woburn, Massachusetts 01801

Telephone: 935-2160
727-5194

0041-0491

OW 767440

R.C.R.A. CLOSURE

Scope of Work:

Three diked, concrete storage areas and one vertical tank shall be cleaned and the tank dismantled.

Area A) Plant "B" Drum Storage concrete pad approximately 16' x 20' with 8" dike wall.

Area B) Plant "D" Drum Storage concrete pad approximately 20' x 50' with 8" dike wall.

Area C) Next to Plant "C-1" concrete pad approximately 20' x 60' with 32" dike wall.

Tank) "By Product HCl Tank" next to Plant "C-1" within "Area C".

1. Contractor shall clean areas by the methods established in the RCRA Closure Plan, attached, which includes :

    a. Water blast all concrete areas with high pressure hot water.
    b. For any remaining contamination, sandblast the concrete areas until no visible surface contamination is evident.

2. Aqueous wastes may be collected and taken to Olin sewer system/ treatment plant.

3. The fiberglass tank is empty of product. Contractor shall dismantle the tank to pieces the size which can be most economically shipped to a landfill. Contractor is advised that the tank contains some acidic sludge.

4. Final closure will be certified by a consultant engineer on the basis of the closure plan. Contractor has the responsibility of meeting requirements for certification. Consultant to be provided by Olin.

5. All solid and non-aqueous liquid wastes to be collected and placed in drums provided by Olin, for disposal by Olin.

6. Contractor to provide labor, materials, equipment, tools, safety equipment and supervison to perform and complete the work. Contractor to provide a manpower loading and work schedule.

7. Work to be started after approval of Closure Plan by government agency. Expected approval date is November 1, 1986 or later.

8. Contractor is advised to visit the site for verification of this information and to familiarize himself with the work area.

MDT/rlg
9-22-86

0041-0493

OW 767442

PROCESS SEWER SYSTEM

Basis of Work: Olin Drawing D.005.200 Revision P. 7/83
Sewer Layout
General Plot Plan

Scope of Work:

1. Existing process sewer lines and trenches as shown on the above drawing along with trenches (not shown) located within existing plant buildings are to be cleaned of all residue and other obstructions including building drains, catch basins and manholes.

2. Buildings "A" and "B" are to be demolished, however their process sewer systems are included in the proposed scope of work.

3. Materials are to be removed from catch basins and manholes and stored in drums provided by Olin. Stored material to be dewatered of all standing water (supernatant liquid) after settling. Drums to be labled, collected and placed in a storage compound area to be designated by Olin. Disposal of drums will be by Olin.

4. Final cleaning and flushing of the sewer system will end at the treatment plant sump. The cleaning and removal of materials from the treatment plant sump is also included in this scope of work.

5. Contractor to provide all necessary labor, equipment, materials, tools and supervision required to perform and complete the scope of work.

6. Contractor to advise Olin how and by what method he will perform the scope of work and any requirements to be provided by Olin.

7. Contractor's bid shall also include a manpower loading and work schedule.

8. Contractor is responsible for cleaning the complete system and is advised to visit the site to insure that the information furnished is complete and to familiarize himself with the work area.

rlg
9-23-86

R.C.R.A. CLOSURE

Scope of Work:

Three diked, concrete storage areas and one vertical tank shall be cleaned and the tank dismantled.

Area A) Plant "B" Drum Storage concrete pad approximately 16' x 20' with 8" dike wall.

Area B) Plant "D" Drum Storage concrete pad approximately 20' x 50' with 8" dike wall.

Area C) Next to Plant "C-1" concrete pad approximately 20' x 60' with 32" dike wall.

Tank) "By Product HCl Tank" next to Plant "C-1" within "Area C".

1. Contractor shall clean areas by the following methods:

    a. Water blast all concrete areas with high pressure hot water.
    b. For any remaining contamination, sandblast the concrete areas until no visible surface contamination is evident.

2. Aqueous wastes may be collected and taken to Olin sewer system/ treatment plant.

3. The fiberglass tank is empty of product. Contractor shall dismantle the tank to pieces the size which can be most economically shipped to a landfill. Contractor is advised that the tank contains some acidic sludge.

4. Final closure will be certified by a consultant engineer on the basis of the closure plan. Contractor has the responsibility of meeting requirements for certification. Consultant to be provided by Olin.

5. All solid and non-aqueous liquid wastes to be collected and placed in drums provided by Olin, for disposal by Olin.

6. Contractor to provide labor, materials, equipment, tools, safety equipment and supervison to perform and complete the work. Contractor to provide a manpower loading and work schedule.

7. Work to be started after approval of Closure Plan by government agency. Expected approval date is November 1, 1986 or later.

8. Contractor is advised to visit the site for verification of this information and to familiarize himself with the work area.

0041-0496

MDT/rlg
9-22-86

8. Contractor is advised to visit the site for verification of this information and to familiarize himself with the work area.

0041-0497

MDT/rlg
9-22-86

PROCESS SEWER SYSTEM

Basis of Work: Olin Drawing D.005.200 Revision P. 7/83
Sewer Layout
General Plot Plan

Scope of Work:

1. Existing process sewer lines and trenches as shown on the above drawing along with trenches (not shown) located within existing plant buildings are to be cleaned of all residue and other obstructions including building drains, catch basins and manholes.

2. Buildings "A" and "B" are to be demolished, however their process sewer systems are included in the proposed scope of work.

3. Materials are to be removed from catch basins and manholes and stored in drums provided by Olin. Stored material to be dewatered of all standing water (supernatant liquid) after settling. Drums to be labled, collected and placed in a storage compound area to be designated by Olin. Disposal of drums will be by Olin.

4. Final cleaning and flushing of the sewer system will end at the treatment plant sump. The cleaning and removal of materials from the treatment plant sump is also included in this scope of work.

5. Contractor to provide all necessary labor, equipment, materials, tools and supervision required to perform and complete the scope of work.

6. Contractor to advise Olin how and by what method he will perform the scope of work and any requirements to be provided by Olin.

7. Contractor's bid shall also include a manpower loading and work schedule.

8. Contractor is responsible for cleaning the complete system and is advised to visit the site to insure that the information furnished is complete and to familiarize himself with the work area.

rlg
9-23-86

PROCESS TANK CLEANING

Scope of Work:

1. The following tanks will be cleaned internally and externally of existing liquids or solids to the extent that they can be disposed of to a scrap dealer.

   a. Sulfuric acid tank containing approximately 1000 gallons of 93% sulfuric acid and sludge. Contractor to designate disposal method for sulfuric acid and sludge with bid.

   b. Diphenyl oxide tank with minimal remaining liquid.

   c. Nonylphenol tank with minimal remaining liquid.

   d. Wytox 312 (tris-nonylphenyl phosphite) tank with minimal remaining liquid.

2. External insulation from c and d shall be removed and placed in polyethylene bags supplies by Olin, and stored on site.

3. Contractor to provide disposal for the four (4) tanks listed above to a scrap dealer. Contractor to specify disposal method with bid.

Notes:

a. Contractor is advised to visit the site to familiarize himself with the work area.

b. Aqueous wastes may be disposed of via Olin's treatment system after approval by Olin.

c. Non-aqueous and solid wastes to be drummed in drums furnished by Olin.

d. Contractor to include a manpower loading and work schedule with bid.

e. Contractor to supply all labor, materials, equipment and supervision to complete the work.

f. All methods of disposal and disposal sites are subject to Olin's approval.

MDT/rlg
9-23-86

LANDFILL

Scope of Work:

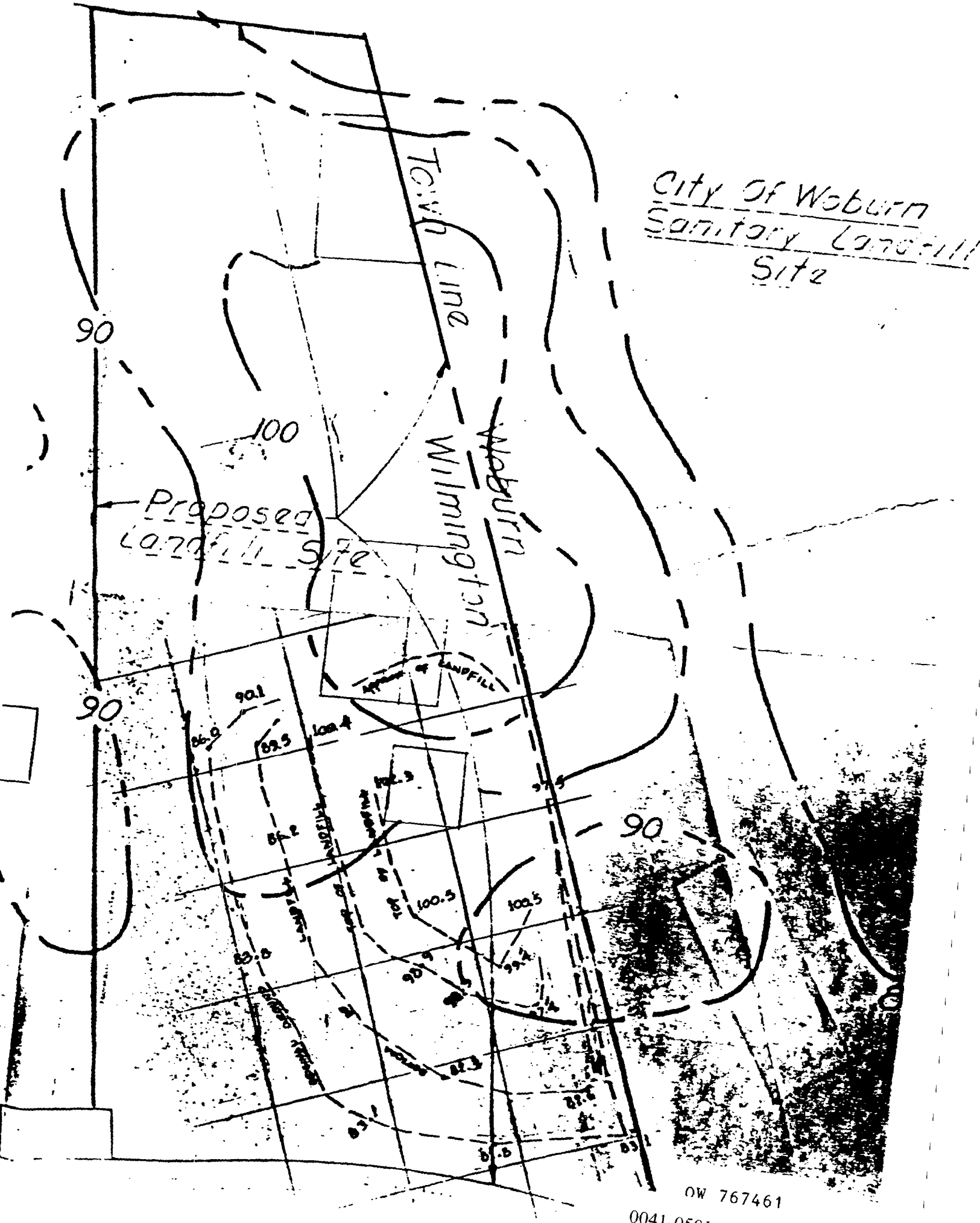
Existing uncapped landfill area along the east/west fence shall be moved so that no part of the final capped landfill is within 100 feet of the south fence. Other uncapped landfill to be moved south so that all moved material shall form a mound equal in height to the existing capped and seeded mound. This newly formed mound shall be capped with 18" of clay, compacted to a permeability of 10^{-5} cm/sec., 16" of topsoil and seeded. The exisitng east/west earth berm shall also be moved 100 feet north to enclose this new mound. Straw bales shall be placed along the fence south and west as a siltation barrier.

1. Contractor to provide all necessary labor, equipment, materials, tools and supervision required to perform and complete the scope of work.

2. Contractor's bid shall also include a manpower loading and work schedule.

3. Contractor is advised to visit the site to insure that the information furnished is correct and to familiarize himself with the work area.

MDT/rlg
9-22-86



OW 767461

0041-0501

R.C.R.A. CLOSURE

Scope of Work:

Three diked, concrete storage areas and one vertical tank shall be cleaned and the tank dismantled.

Area A) Plant "B" Drum Storage concrete pad approximately 16' x 20' with 8" dike wall.

Area B) Plant "D" Drum Storage concrete pad approximately 20' x 50' with 8" dike wall.

Area C) Next to Plant "C-1" concrete pad approximately 20' x 60' with 32" dike wall.

Tank) "By Product HCl Tank" next to Plant "C-1" within "Area C".

1. Contractor shall clean areas by the methods established in the RCRA Closure Plan, attached, which includes :

    a. Water blast all concrete areas with high pressure hot water.
    b. For any remaining contamination, sandblast the concrete areas until no visible surface contamination is evident.

2. Aqueous wastes may be collected and taken to Olin sewer system/ treatment plant.

3. The fiberglass tank is empty of product. Contractor shall dismantle the tank to pieces the size which can be most economically shipped to a landfill. Contractor is advised that the tank contains some acidic sludge.

4. Final closure will be certified by a consultant engineer on the basis of the closure plan. Contractor has the responsibility of meeting requirements for certification. Consultant to be provided by Olin.

5. All solid and non-aqueous liquid wastes to be collected and placed in drums provided by Olin, for disposal by Olin.

6. Contractor to provide labor, materials, equipment, tools, safety equipment and supervison to perform and complete the work. Contractor to provide a manpower loading and work schedule.

7. Work to be started after approval of Closure Plan by government agency. Expected approval date is November 1, 1986 or later.

8. Contractor is advised to visit the site for verification of this information and to familiarize himself with the work area.

MDT/rlg
9-22-86

0041-0503

OW 767463

EXHIBIT I

FORM [illegible] REV. [illegible]

INTER OFFICE MEMO Olin

TO	Distribution	AT		DATE	7/12/84
FROM	Ken O'Keefe	AT	Stamford	COPY TO	Jim Martucci - WI June Plumer - WI Accounts Payable - WI S. Sobolewski - Original
SUBJECT	Contract No. CS-WI-0000-02205 SCA Chemical Services				

Please find attached here for your files one fully conformed copy of the subject Agreement.

Jeanne Whitney

0041-0505

WHY FILE THIS COPY? IF YOU MUST RETAIN IT, SPECIFY A DEFINITE RETENTION PERIOD: ONE YEAR_____ OTHER_____

WASTE DISPOSAL AGREEMENT

CONTRACT NO. CS-WI-0000-02205

This WASTE DISPOSAL AGREEMENT (hereinafter this "Agreement"), made and entered into as of this 17th day of May, 1984 by and between OLIN CORPORATION, a Virginia corporation with its principal offices at 120 Long Ridge Road, Stamford, Connecticut 06904 ("Olin") and SCA Chemical Services, Inc. with offices at 60 State Street, Boston, Massachusetts 02109 ("Contractor");

W I T N E S S E T H

WHEREAS, Olin wishes to retain Contractor in its capacity as an independent contractor to dispose of Waste Products (as hereinafter defined); and

WHEREAS, Contractor has represented to Olin that it is experienced in the waste disposal business and wishes to be so retained;

NOW, THEREFORE, in consideration of the foregoing premises and the mutual and dependent promises hereinafter set forth, the parties hereto agree as follows:

1. DEFINITIONS

As used in this Agreement, the following terms shall have the following meanings (such meanings being equally applicable to both singular and plural forms or to grammatical variations, as the case may be);

"Delivery" means the earliest to occur of (a) the transfer to Contractor of Waste Products, (b) the taking of possession or control by Contractor of Waste Products, or (c) the commencement by Contractor of any work on Waste Products at the Facility.

"Facility" means Olin's plant located at Wilmington, MA

"Laws" means all applicable laws, rules, regulations, orders, decisions, interpretations or other legally binding requirements imposed by any Federal, state or local legislature, court or governmental authority, agency, board or other body.

"Service" means to take Delivery, transport, treat, store and/or otherwise dispose of Waste Products pursuant to this Agreement.

"Waste Products" means the materials (including, where applicable, and as indicated in Exhibit A, the containers in which such materials are placed) listed and described in Exhibit A, attached hereto and made a part hereof.

2. TERM

This Agreement shall be effective as of 17 May 1984 and shall end on 16 May 1985.

3. PAYMENT

a. Olin shall pay Contractor for performing hereunder in accordance with the rate schedule set forth in Exhibit B, attached hereto and made a part hereof.

b. Total payments hereunder are not to exceed Twenty Five Thousand Dollars ($25,000) without specific written authorization by Olin. Contractor shall notify Olin in writing in accordance with Section 17 hereof when 85% of this amount is expended.

c. Payments shall be calculated based upon certified scale quantities, volumetric measurement, drum or other quantity count, e.g., number of bags, pipes, etc., at the Facility, whichever applies, according to Exhibit B. Actual scale quantities shall be determined by Olin through the use of certified scales at the time of Delivery. Drum or other quantity count, if any, shall be determined by Olin at the time of Delivery.

d. Contractor shall submit invoices no later than the fifth day after the end of each calendar month to Olin. Contractor agrees to keep copies of said invoices for the maximum time required by Laws, and Olin shall have the right to examine said invoice, and any supporting documents containing an accurate quantity count of Waste Products included in such invoices. Payment shall be net thirty (30) days from the date of receipt of invoice; provided, that, Olin may require reasonable verification of the accuracy of any invoice prior to making payment therefor.

e. Invoices (and documents attached thereto) must include the Olin Contract Number and shall be mailed or delivered by hand in triplicate to:

Olin Corporation
51 Eames Street
Wilmington, MA 01887
Attention: Accounts Payable

f. No invoices shall be subject to payment unless all completed manifest documents or other documents required by Laws to be returned by Contractor to Olin have been received by Olin prior to, or concurrent with, presentation of any such invoice.

4. CONTRACTOR RESPONSIBILITIES

a. Provided the Waste Products meet the description in Exhibit A, Contractor hereby undertakes the sole and continuous responsibility of Servicing those Waste Products that Olin Delivers to Contractor. Contractor hereby acknowledges that it has been advised by Olin, and fully understands, that the Waste Products may be, or may become, harmful to humans, animals, property or the environment by reason of toxicity, flammability, explosivity, corrosivity, reactivity, ignitability, incompatibility, radioactivity or for other different or similar reasons or characteristics. Contractor further represents and warrants that it has independent knowledge of the characteristics or dangers of the Waste Products subject to this Agreement.

b. Contractor hereby agrees to warn and advise all of its employees, subcontractors and other agents of each and all of the actual or potential harmful effects or characteristics of any Waste Products subject to this Agreement.

c. Contractor agrees to Service Waste Products in accordance with Laws and only in a manner and, after taking Delivery, at a location approved by appropriate governmental authorities pursuant to Laws and specifically designated (as required by Laws) by Olin and as set forth in the Disposal and Special Handling Requirements section of Exhibit A, for that specific Waste Product. Contractor shall not use, reuse, recycle, recover, reclaim, resell, transfer, or give away any Waste Product, or component or container thereof, unless it has obtained Olin's prior written approval to do so. Except as may be otherwise specifically agreed to in writing by the parties, Contractor shall complete Servicing of any Waste Products in accordance with the requirements of this Agreement within thirty (30) days of Delivery, unless a shorter time is specified by Laws. Contractor shall provide Olin with a properly prepared copy of all manifest documents required by Laws within thirty (30) days of completion of Servicing each Delivery of Waste Products, unless a shorter time is specified by Laws. Olin may, in the event that no such manifest document is required by Laws, require Contractor to return to Olin a completed manifest form in substantially the form of Exhibit C, attached hereto and made a part hereof, for each Waste

Product within thirty (30) days of completion of Servicing each Delivery of Waste Products. Contractor shall submit to Olin on the last day of each calendar month a current inventory of Waste Products Delivered to Contractor for which Services have not been completed by Contractor.

d. Contractor shall provide all equipment and personnel necessary for its performance of this Agreement.

e. All equipment furnished by Contractor shall be in a suitable condition and appropriate to Service the Waste Products specified herein.

f. Contractor shall placard all vehicles used in transporting and shall transport the Waste Products in conformance with Laws.

g. Contractor shall have the right to revoke any Delivery of Waste Products if, within thirty (30) days thereof, Contractor demonstrates to Olin that the Waste Products are non-conforming, and such non-conformity is due solely to Olin's Delivery of non-conforming Waste Products. Following such demonstration, the parties may arrange for further Servicing of such Waste Products upon mutually agreeable terms and conditions. If the parties fail to reach such agreement, or if Olin fails to arrange for alternate lawful disposal, Contractor shall prepare for lawful transportation and return the Waste Products to Olin. Olin shall pay Contractor its reasonable expenses and charges for handling, loading, preparing, transporting, storing and caring for non-conforming Waste Products.

It is further agreed that Contractor is responsible for the Waste Products, and for any injury or harm arising therefore which are returned to Olin, and which are not non-conforming.

5. OLIN RESPONSIBILITIES

a. Olin shall provide Contractor with a description of the Waste Products to be serviced in substantially the form as Exhibit A attached hereto. It is understood and agreed that Contractor bases its testing, evaluation and service procedures on the Waste Product Description of Exhibit A.

b. Olin, to the extent required by Laws, shall package, mark and label Waste Products, provide appropriate placards and prepare documents.

c. Provided the Waste Products meet the description of Exhibit A, Olin shall not be liable in any manner to Contractor for any actual or alleged failure to give any warning, or for the inadequacy of any warning given, or for any actual or alleged harmful or potentially harmful effects or characteristics of any Waste Products.

d. Olin does not undertake to supply any minimum quantities of Waste Products under this Agreement.

6. DELIVERY AND TITLE

a. By prearrangement between the parties as to time, Contractor shall take Delivery of the Waste Products at the Facility after Olin has executed and delivered to Contractor its standard release order in the form set forth in Exhibit D, attached hereto and made a part hereof.

b. Provided the Waste Products meet the description of Exhibit A, risk of loss, title to, and all other incidents of ownership of (including, without limitation, all legal responsibility for), the Waste Products shall pass to Contractor upon Delivery to Contractor. Failure to reject Delivery, except as herein provided, shall be an acknowledgement by Contractor that Olin has prepared the Waste Products in a manner acceptable to Contractor and in full compliance with the terms of this Agreement.

7. INDEPENDENT CONTRACTOR

Contractor is, and shall perform its obligations under this Agreement, solely as an independent contractor. Neither Contractor nor any employee, subcontractor or other agent of Contractor shall be, represent itself as, act as, purport to act as, or be deemed to be, the agent, representative, employee or servant of Olin for any purpose whatsoever and no such party shall have any right or authority to make any representations, or to assume or create any obligation of any kind, express or implied, on behalf of Olin, or to make any warranty concerning the Waste Products, or to bind Olin in any respect whatsoever.

8. SAFETY

a. Prior to Contractor commencing any Servicing of Waste Products under this Agreement, Contractor shall participate in a tour of the Facility conducted by Olin with the purpose of fully informing Contractor of the safety requirements and restricted areas within the Facility. Subsequent to this initial tour, it will be the responsibility of Contractor to properly inform his representatives, agents, employees and subcontractors of

Olin's safety requirements (as set forth in Exhibit E, attached hereto and made a part hereof), to insure that Contractor's Servicing of the Waste Products is done with safety and diligence. It shall be the Contractor's responsibility to comply with, and to cause its representatives, agents, employees and subcontractors to comply with, Olin's safety requirements and with Olin safety and traffic signs, as they may be modified by Olin, from time to time, and to request subsequent tours of the Facility if Contractor deems such tours to be necessary.

b. Olin shall have the right to refuse to Deliver Waste Products without incurring any charges (including demurrage) for such refusal if Olin, in its sole discretion, finds any of Contractor's personnel or equipment unfit or unsafe for Servicing the Waste products or if copies of hazardous waste transport insurance certificates and other documents required to be carried by Contractor pursuant to Laws are not carried with each transport vehicle at the time of Delivery.

9. CONTRACTOR'S REPRESENTATIONS, WARRANTIES AND COVENANTS

a. Contractor shall comply with all Laws.

b. Contractor warrants that it has, and will maintain in force, all permits and/or other documents which are, or may from time to time be, required by Laws for Servicing the Waste Products.

c. Contractor shall forward to Olin, within thirty (30) days following the date of execution of this Agreement by the parties, or, if earlier, prior to commencement of Services under this Agreement, copies of any permit, or other document required by Laws in connection with the performance by Contractor of Servicing any Waste Products.

d. In the event that Contractor shall lose, or be denied, or receive notice of any intent to revoke, suspend, terminate or deny any permit or approval required by Laws, or that any permit or approval necessary for Contractor to perform any Servicing hereunder is otherwise modified in a manner that prevents Contractor from lawfully promptly performing any such Servicing hereunder, Contractor shall not thereafter accept Delivery of any Waste Products or perform any Servicing for which it no longer has authorization, and shall, within two (2) business days after any such loss, denial or notification, send to Olin a written statement fully describing such occurrence and the extent of Contractor's inability to Service Waste Products.

e. Nothing in this Section 9 shall in any way limit Contractor's responsibilities under this Agreement.

10. OLIN'S WARRANTIES

Olin warrants that:

a. Olin has complied, for each Delivery of Waste Products, with all Laws applicable to the generators of Waste Products;

b. The Waste Products delivered to SCA will conform to the descriptions set forth in Exhibit A hereof;

c. Olin holds clear title to all Waste Products transferred hereunder and is under no legal restraint or order which would prohibit transfer of possession or title to such Waste Products to SCA or the servicing of such materials by Contractor;

d. If Olin independently develops information, that is available from no other source, during the term of any Exhibit A hereof, that Waste Products described in any Exhibit A hereof present a hazard or risk to persons or the environment which was not previously disclosed pursuant to the terms of this Agreement, Olin shall promptly report such information to Contractor. Such information shall include, but not be limited to, any relevant notification of substantial risk given by the Contractor pursuant to Section 8(e) of the Toxic Substances Control Act.

11. CONFIDENTIALITY

Contractor shall treat as confidential and not disclose to others during, or for five (5) years subsequent to, the term of this Agreement or any extension hereof, any information concerning Olin or this Agreement, including but not limited to, any of Olin's plans, programs, plants, processes, products, costs, equipment, operations or customers which has heretofore or which may in the future come within the knowledge of Contractor in the performance of this Agreement, without in each instance securing the prior written consent of Olin. Contractor shall also treat as confidential and shall not disclose to others, information relating to the chemical composition of the Waste Products and/or the quantity of Waste Products released to it by Olin. Nothing herein, however, shall prevent Contractor from disclosing to others, or using in any manner, information which Contractor can show:

a. has been published and has become part of the public domain other than by acts, omissions or fault of Contractor;

b. has been furnished or made known to Contractor by third parties, other than those acting directly or indirectly for or on behalf of Olin, as a matter of legal right and without restrictions on its disclosure;

c. was in Contractor's possession without restrictions on its disclosure prior to the disclosure thereof by Olin to Contractor.

d. is required to be disclosed, to the extent disclosed and to the parties to whom disclosed, by Law.

12. INDEMNITY

Provided the Waste Products meet the description in Exhibit A, Contractor hereby agrees to indemnify, defend and hold harmless Olin from any and all liability (including for negligence), cost, loss, damage or other expense (including, without limitation, legal expenses) of whatever nature and howsoever arising (including, without limitation, resulting from damage to property, injury or death of persons or violation of any Laws or regulations), in connection with, or in any way related to, Contractor's performance hereunder after risk of loss hereto has passed to Contractor as provided for in Section 6 of this Agreement. Olin agrees to give Contractor written notification of any claim, demand, or suit of which it has received notice arising out of or in connection with this Agreement and covered by this indemnity; provided, that Olin's failure to so notify Contractor shall not affect Olin's rights hereunder. Upon written request of Olin, Contractor shall promptly defend any such claim, demand, cause of action or suit, or permit Olin to defend any such demand, claim, cause of action or suit at Contractor's expense.

Olin hereby agrees to indemnify, defend and hold harmless Contractor from any and all liability (including for negligence), cost, loss damage or other expense (including, without limitation, legal expenses) of whatever nature (including without limitation, resulting from damage to property, injury or death of persons or violation of any laws or regulations) arising and directly and solely caused by the breach of any warranties contained in this Agreement by Olin, its employees or agents, in performance of this Agreement.

13. INSURANCE

a. Contractor agrees to furnish certificates of insurance, issued by companies acceptable to Olin, at Contractor's expense, attesting to the existence of:

(i) Worker's Compensation Insurance, including occupational diseases, providing for the payment of statutory benefits required by law covering Contractor's performance under this Agreement.

(ii) Employer's Liability Insurance with a minimum limit per occurrence of $500,000.

(iii) Longshoremen's and Harbor Workers' Compensation Act Insurance, in compliance with applicable statutes.

(iv) Comprehensive General Liability including Pollution Insurance coverage on a personal injury basis with limits as follows:

a. Bodily Injury and Property Damage Liability with a minimum of $5,000,000 combined single limit per occurrence, such coverage shall include contractual liability and products liability (including completed operations).

b. Public and Contractual Liability Insurance which shall include Contractor's contractual liability (including, without limitation, for claims arising pursuant to Section 11 above), including completed operations, under this Agreement with a minimum limit of $5,000,000 per occurrence. Contractor agrees to have Olin designated as an additional insured party under Contractor's public and contractual liability insurance contract.

(v) Comprehensive automobile liability insurance with at least $1,000,000 single limit per occurrence.

(vi) All other coverage required by Laws, including in addition to insurance, any other form of financial protection required.

b. Contractor agrees to have insurance certificates forwarded to Olin within thirty (30) days following the date of execution of this Agreement by the parties, or, if earlier, prior to commencement of Services under this Agreement. Such certificates shall provide that the coverage shall not be decreased, otherwise materially altered, or terminated without thirty (30) days prior written notice thereof being given to Olin by the insurance carrier.

c. The insurance described herein sets forth minimum amounts and types of coverage, and is not to be construed in any way as a limitation of Contractor's liability under this Agreement.

14. FORCE MAJEURE

Neither party shall be liable for any delay or failure of performance due solely to acts of God, strikes, fires or other causes beyond its control and without its fault or negligence, and so long as such party is in compliance with Laws, provided, that, the party subject to such cause shall have given written notice thereof to the other as soon as such event could be anticipated, and if it could not be anticipated, promptly following the commencement thereof. In the event Contractor cannot meet all of its performance commitments hereunder, Contractor shall not unreasonably discriminate against Olin or in favor of any other customer which SCA demonstrates has not undertaken to supply any minimum quantities of materials. Contractor shall use its best efforts to anticipate, and mitigate, the effect of such cause and to render performance as expeditiously as possible. However, if Olin believes that the delays or anticipated delays in Contractor's performance may impair Olin's ability to meet any requirement imposed by Laws or may otherwise interfere with its operations, Olin may, at its option and without liability to Contractor, cancel any pending performance hereunder wholly or in part. Notwithstanding any provision of this Agreement, Contractor agrees that increased costs alone will not excuse its performance. Nothing in this Section 14 shall affect Contractor's responsibilities and liabilities under any provision of this Agreement other than and only to the extent such provisions require Contractor to Service Waste Products. Without limiting the effect of the foregoing sentence in any way, nothing in this Section 14 shall limit Contractor's obligations under Section 12 hereof.

15. ASSIGNMENT

Neither party shall assign this Agreement, its performance pursuant thereto, or any monies due or to become due hereunder; and any attempt to so assign shall be void unless with the prior written consent of both parties, except that this Agreement may be assigned without consent in connection with the acquisition or merger of Olin, the acquisition of all or substantially all of the assets of the Chemicals Group of Olin, or the sale by Olin of the Facility.

16. NONEXCLUSIVITY

This Agreement is not to be construed as granting Contractor the exclusive right to Service Olin's Waste Products, and Olin reserves the right to contract with other parties for such Services as it deems necessary in its sole discretion.

17. WAIVER

Any waiver by either party of any provision or condition of this Agreement must be in writing signed by the waiving party and shall not be construed or deemed to be a waiver of any other provision or condition of this Agreement, nor a waiver of a subsequent breach of the same or another provision or condition.

18. NOTICE

Any notice, communication or statement required or permitted to be given hereunder shall be in writing and deemed to have been sufficiently given when delivered in person or sent by wire or by certified mail, return receipt requested, postage prepaid, to the address of the respective party below:

a. If to Olin:

Olin Corporation
Contract Services Department
120 Long Ridge Road
Stamford, Connecticut 06904
Attention: Ken O'Keefe

b. If to Contractor:

SCA Chemical Services, Inc.
385 Quincy Avenue
Braintree, MA 02104
Attention: Jim Purington

or to such other address for either party as that party may by notice designate.

19. TERMINATION

Either party may terminate this Agreement upon breach of any provision of this Agreement by the other party.

20. SEVERABILITY

In case any one or more of the provisions contained in this Agreement shall, for any reason, be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had not been contained herein.

21. APPLICABLE LAW

The validity, interpretation and performance of this Agreement shall be governed and construed in accordance with the laws of the State of Connecticut.

22. SECTION HEADINGS

All section headings herein are for convenience only and are in no way to be construed as part of this Agreement or as a limitation of the scope of the particular Sections to which they refer.

23. ENTIRE AGREEMENT

This Agreement constitutes the entire understanding and agreement between the parties hereto relating to the Servicing of Waste Products and supersedes any and all prior agreements, whether written or oral, that may exist between the parties regarding same. No terms, conditions, prior courses of dealing, courses of performance, usages of trade, understandings or agreements purporting to modify, vary, supplement or explain any provision of this Agreement shall be effective and none shall be binding unless in writing, signed by duly authorized representatives of both parties.

24. SURVIVAL

The provisions of the final sentence of Section 4(a), Section 4(b), the second sentence of Section 4(c), the final sentence of Section 4(g), Section 6(b), 9, 10, 11, 12, 20, 21, 23 and 24 of this Agreement shall survive any expiration, completion or other termination of this Agreement.

25. EXECUTION IN COUNTERPARTS

This Agreement may be executed by each of the parties hereto in separate counterparts, each of which shall be deemed to be an original and both of which taken together shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

SCA CHEMICAL SERVICES, INC.		OLIN CORPORATION	
BY:		BY:	
TITLE:	President - Chem Group	TITLE:	K. O'Keefe Purchasing Agent
DATE:	6-27-84	DATE:	5/17/84

Exhibit A-01

CS-WI-0000-02205

5/17/84

Name:	Absorbant Pads
Product Code:	MC101
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 80- 90% Pads 10- 20% Water 0.5-1.0% Bis(2-Ethylhexyl)phthalate 0.5-1.0% Diphenylamine 2- 15% Dirt, Sand, and Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-02

CS-WI-0000-02205

5/17/84

Name:	Off Spec Kempore Dispersions
Product Code:	MC102
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 50- 60% Bis(2-Ethylhexyl)phthalate 40- 50% AZODdicarbonamide 1- 2% Silica 2- 30% Dirt, Sand, Speedi-dri 0- 20% Expoxidized Soybean Oil
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-03

CS-WI-0000-02205

5/17/84

Name:	Actafoam A-3
Product Code:	MC103
Typical Analysis:	Physical State @ 25°C Solid Flash Point – 110 Composition - 40- 45% Metallic Salts of Fatty Acids 25- 27% Bis(2-Ethylhexyl)phthalate 18- 20% Mineral Spirits 3- 5% Potassium Hydroxide 7- 9% Zinc Oxide 5- 25% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-04

CS-WI-0000-02205

5/17/84

Name:	Pretreatment Plant Skimmings
Product Code:	BR131A
Typical Analysis:	Physical State @ 25°C ~~Solid~~ liquid D.L.L. Flash Point - 63 pH - 7.1 Composition - 97- 99% Process Oil .002-.003% Heavy Metals 1- 2% Water Trace Organic
Disposal Requirements:	Material to be incinerated at Contractor's Braintree, MA facility only.

#0722A

Exhibit A-05

CS-WI-0000-02205

5/17/84

Name:	Paraformaldehyde Mixed with Water
Product Code:	MC106
Typical Analysis:	Physical State @ 25°C Solid Flash Point - 70 Composition - 50- 80% Paraformaldehyde 20- 50% Water 10- 30% Dirt, Absorbent Material
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-06

CS-WI-0000-02205

5/17/84

Name:	Wytox
Product Code:	MC107
Typical Analysis:	Physical State @ 25°C Solid Flash Point - 188 Composition - 80- 90% Trisnonylphenyl Phosphite 0.5-1.0% Bis(2-Ethylhexyl)phthalate 10- 30% Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-07

CS-WI-0000-02205

5/17/84

Name:	Filters
Product Code:	MC108
Typical Analysis:	Physical State @ 25°C Solid Composition - 90- 98% Filter Material 1- 2% Muriatic Acid 0- 10% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-08

CS-WI-0000-02205

5/17/84

Name:	Off Spec Adipic Dihydrazide
Product Code:	MC111
Typical Analysis:	Physical State @ 25°C Solid Composition - 80-100% Adipic Dihydrazine 0- 20% Sulfate Salts of Adipic Acid 0- 20% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-09

CS-WI-0000-02205

5/17/84

Name:	Waste Alcohol
Product Code:	BR122A
Typical Analysis:	Physical State @ 25°C ~~Solid~~ liquid D.L.L. Flash Point - > 52°F Composition - 50- 90% Methanol 0- 30% N-Butanol 0- 35% Water 0- 1% Chloride, Hydrazine, Ammonia, Carbon Dioxide
Disposal Requirements:	Material to be incinerated at Contractor's Braintree, MA facility only.

#0722A

Exhibit A-10

CS-WI-0000-02205

5/17/84

Name:	Potassium Stearate
Product Code:	MC117
Typical Analysis:	Physical State @ 25°C Solid Flash Point - 176°C Composition - 100% Potassium Stearate 0- 20% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-11

CS-WI-0000-02205

5/17/84

Name:	Wytox Floor Sweepings (PAP)
Product Code:	MC118
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 0- 40% Tris-nonylphenyl Phosphite 0- 40% Polymeric Alkylated Phenol 3- 5% Actafoam F-2 Powder 60- 70% Dirt, Sand, Speedi-dri 3- 4% Water
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-12

CS-WI-0000-02205

5/17/84

Name:	Kempore Sweepings
Product Code:	MC119
Typical Analysis:	Physical State @ 25°C Solid Flash Point - 110°C Composition - 80- 90% Azodicarbonamide 10- 20% Dirt, Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-13

CS-WI-0000-02205

5/17/84

Name:	Benzophenone Hydrazone Floor Sweepings
Product Code:	MC120
Typical Analysis:	Physical State @ 25°C Solid Flash Point - 162°C Composition - 85- 98% Benzophenone Hydrazone 2- 15% Dirt, Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-14

CS-WI-0000-02205

5/17/84

Name:	Sodium Azide Liners
Product Code:	MC122
Typical Analysis:	Physical State @ 25°C Solid Composition - 0.5- 1.0% Sodium Azide 90-99.5% Polyethylene Liners 0- 10% Dirt, Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-15

CS-WI-0000-02205

5/17/84

Name:	Off Spec Wytox 345
Product Code:	BR121A
Typical Analysis:	Physical State @ 25°C ~~Solid~~ viscous liquid D.L.L. Flash Point - 162°C Composition - 100% Tris(nonylphenyl)phosphite
Disposal Requirements:	Material to be incinerated at Contractor's Braintree, MA facility only.

#0722A

Exhibit A-16

CS-WI-0000-02205

5/17/84

Name:	Kempore SDA-200
Product Code:	MC124
Typical Analysis:	Physical State @ 25°C Solid Flash Point - 93°C Composition - 20- 45% Bis(2-ethylhexyl)phthalate 31- 34% Azodicarbonamide 10- 25% Actafoam R-3* 5- 10% Water 0- 30% Sand, Speedi-dri *Metallic Salts of Fatty Acids
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-17

CS-WI-0000-02205

5/17/84

Name:	PEG 400
Product Code:	MC128
Typical Analysis:	Physical State @ 25°C Solid Flash Point - > 180°C Composition - ~~100%~~ 80% Polyethylene Glycol D.L.L. 0- 20% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-18

CS-WI-0000-02205

5/17/84

Name:	Wytox PAP
Product Code:	BR121B
Typical Analysis:	Physical State @ 25°C ~~Solid~~ liquid viscous D.L.L. Flash Point - 47°C Composition - 100% Polymeric Alkylated Phenol
Disposal Requirements:	Material to be incinerated at Contractor's Braintree, MA facility only.

#0722A

Exhibit A-19

CS-WI-0000-02205

5/17/84

Name:	Waste Dee-Tac[R]
Product Code:	MC132
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 11- 14% Potassium Soap 18- 22% Carboxymethylcellulose 65- 70% Water 0- 30% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-20

CS-WI-0000-02205

5/17/84

Name:	Kempore Sweepings
Product Code:	MC136
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 12- 60% Axodicarbonamide 30- 60% Sodium Bicarbonate 0- 60% Urea 0- 12% Zinc Oxide 0- 15% Calcium Stearate 0- 10% Potassium Stearate 0- 4% Process Oil
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-21

CS-WI-0000-02205

5/17/84

Name:	Kempore Sweepings
Product Code:	MC137
Typical Analysis:	Physical State @ 25°C Solid Flash Point - 93°C Composition - 50- 90% Azodicarbonamide 0- 20% Calcium Stearate 0- 10% Hisil 233 0- 10% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-22

CS-WI-0000-02205

5/17/84

Name:	Nitropore ATA Floor Sweepings
Product Code:	MC138
Typical Analysis:	Physical State @ 25°C Solid Flash Point - > 150°C Composition - 40- 50% Azodicarbonamide 40- 50% Opex* 5- 10% Hisil 2- 5% Calcium Oxide 5- 10% Dirt, Sand, Speedi-dri * Dinitrosopentamethylenetetramine
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-23

CS-WI-0000-02205

5/17/84

Name:	Waste RIA Sweepings
Product Code:	MC139
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 75- 97% Urea 2- 4% Calcium Stearate Trace Aerosil Trace #415 Oil 0- 25% Dirt, Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-24

CS-WI-0000-02205

5/17/84

Name:	Off Spec Wytox Solids
Product Code:	MC140
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 0- 75% Tris(nonylphenyl)phosphite 25- 40% Silica 0- 75% Polymeric Alkylated Phenol 0- 25% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-25

CS-WI-0000-02205

5/17/84

Name:	OBSH-SD
Product Code:	MC142
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 40- 60% Bis(2-Ethylhexyl)phthalate 40- 60% Oxybisbenzenesulfonnydrazide 0- 30% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-26

CS-WI-0000-02205

5/17/84

Name:	Waste Calcium Stearate
Product Code:	MC143
Typical Analysis:	Physical State @ 25°C Solid Composition - 100% Calcium Stearate
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-27

CS-WI-0000-02205

5/17/84

Name:	Kempore/Santicizer 711 Dispersions
Product Code:	MC144
Typical Analysis:	Physical State @ 25°C Solid Flash Point - >150°C Composition - 40- 60% Axodicarbonamide 40- 60% Di(C_7-C_9-C_{11}alkyl)phthalate* 0- 40% Sand, Speedi-dri 0- 5% Epoxidized Soybean Oil 0- 3% Silica 0- 2% Water *Monsanto Product Description (Proprietary)
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-28

CS-WI-0000-02205

5/17/84

Name:	Wytox-S
Product Code:	MC145
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 0- 60% Azodicarbonamide 0- 60% Polymeric Tris(nonylphenyl)phosphite 0- 40% Opex* 0- 15% Stones, Dirt, Speedi-dri
	*Dinitrosopentamethylenetetramine, (DNPT)
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-29

CS-WI-0000-02205

5/17/84

Name:	Sludge Cleanup
Product Code:	MC147
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 0- 40% Kempore* 0- 10% Opex** 0.0-1.0% Oil 10- 60% Sand/Dirt, Misc. 5- 10% Lime 0- 20% Water *Azodicarbonamide **Dinitrosopentamethylenetetramine
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-30

CS-WI-0000-02205

5/17/84

Name:	Waste Wytox ADP-F
Product Code:	MC148
Typical Analysis:	Physical State @ 25°C Solid Flash Point - 215°C Composition - 80-100% Dioctyldiphenylamine 0- 10% Silica 0- 20% Dirt
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-31

CS-WI-0000-02205

5/17/84

Name:	Waste Oil
Product Code:	BR131A
Typical Analysis:	Physical State @ 25°C Solid Flash Point - > 120°C Composition - 75-100% Waste Oil 0- 25% Inert Solids Heavy Metals (see sheet 2)
Disposal Requirements:	Material to be incinerated at Contractor's Braintree, MA facility only.

#0722A

Exhibit A-31

CS-WI-0000-02205

5/17/84

Olin Waste Oil	Results in ug/g
Ag	<0.050
As	<0.050
Ba	0.32
Cd	0.050
Cr	0.18
Pb	<0.12
Se	<0.050
Be	<0.050
Cu	0.18
Ni	0.10
Sb	<0.050
Tl	<0.050
Zn	2.1

#0722A

Exhibit A-32

CS-WI-0000-02205

5/17/84

Name:	Low Assay, 1-2-4 Triazole
Product Code:	MC158
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 80- 90% 1-2-4-Triazole 0.2-2.0% Formamide 2- 4% Amino Triazole 2- 4% Residue 0- 10% Inert Solids
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

Exhibit A-33

CS-WI-0000-02205

5/17/84

Name:	Wytox Liquids
Product Code:	BR121C
Typical Analysis:	Physical State @ 25°C ~~Solid~~ viscous liquid Flash Point - > 375°F Composition - 100% Trisnonylphenyl Phosphite
Disposal Requirements:	Material to be incinerated at Contractor's Braintree, MA facility only.

#0722A

Exhibit A-34

CS-WI-0000-02205

5/17/84

Name:	OBSH-SD
Product Code:	MC160
Typical Analysis:	Physical State @ 25°C Solid
	Composition - 40- 60% 4,4'-oxybis(benzenesulfonylhydrazide) Formulation 40- 60% Phthalate Ester 0- 20% Sand, Speedi-dri
Disposal Requirements:	Material to be landfilled at Contractor's Model City, NY facility only.

#0722A

CS-WI-0000-02205

EXHIBIT B

Waste From Olin Corporation

Wilmington, MA

Waste Stream Identification

5/17/84

NUMBER	WASTE STREAM DESCRIPTION	EXPECTED ANNUAL VOLUME	PRODUCT CODE	PACKAGING	**DISPOSAL FEE	*TRANSPORT COST	EFFECTIVE DA OF DISPOSAL TRANSPORTATI FEE
3-01	Absorbant Pads	24 Drums	MC101	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
3-02	Off Spec Kempore	3 Drums	MC102	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
3-03	Actafoam-A3	10 Drums	MC103	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
3-04	Plant Skimmings	15 Drums	BR131A	Drums	$31.00 per 55 Gal. Drum	$ 560 Full Load	5/17/84
3-05	Paraformaldehyde	3 Drums	MC106	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
3-06	Wytox	6 Drums	MC107	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
3-07	Filters	3 Drums	MC108	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
3-08	Off Spec Adipic Dihydrazide	5 Drums	MC111	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
3-09	Waste Alcohol	50 Drums	BR122A	Drums	$66.00 per 55 Gal. Drum	$ 560 Full Load	5/17/84
3-10	Potassium Stearate	4 Drums	MC117	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
3-11	Wytox Floor Sweepings	24 Drums	MC118	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84

#0722A

CS-WI-0000-02205

EXHIBIT B

Waste From Olin Corporation

Wilmington, MA

Waste Stream Identification

5/17/84

NUMBER	WASTE STREAM DESCRIPTION	EXPECTED ANNUAL VOLUME	PRODUCT CODE	PACKAGING	**DISPOSAL FEE	*TRANSPORT COST	EFFECTIVE DA OF DISPOSAL TRANSPORTATI FEE
B-12	Kempore Sweepings	48 Drums	MC119	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
B-13	Floor Sweepings	5 Drums	MC120	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
B-14	Sodium Azide Liners	3 Drums	MC122	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
B-15	Off Spec Wytox 345	1 Drum	BR121A	Drums	$193.00 per 55 Gal. Drum	$ 560 Full Load	5/17/84
B-16	Kempore SDA-200	30 Drums	MC124	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
B-17	PEG-400	4 Drums	MC128	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
B-18	Wytox PAP	25 Drums	BR121B	Drums	$31.00 per 55 Gal. Drum	$ 560 Full Load	5/17/84
B-19	Waste Dee-Tac[R]	2 Drums	MC132	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
B-20	Kempore Sweepings	70 Drums	MC136	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
B-21	Kempore Sweepings	10 Drums	MC137	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
B-22	Floor Sweepings	5 Drums	MC138	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84

#0722A

CS-WI-0000-02205

EXHIBIT B

Waste From Olin Corporation

Wilmington, MA

Waste Stream Identification

5/17/84

UMBER	WASTE STREAM DESCRIPTION	EXPECTED ANNUAL VOLUME	PRODUCT CODE	PACKAGING	**DISPOSAL FEE	*TRANSPORT COST	EFFECTIVE DAT OF DISPOSAL & TRANSPORTATIC FEE
-23	RIA Sweepings	10 Drums	MC139	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
-24	Off Spec Wytox Solids	7 Drums	MC140	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
-25	OBSH-SD	5 Drums	MC142	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
-26	Calcium Stearate	3 Drums	MC143	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
-27	711 Dispersions	5 Drums	MC144	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
-28	Wytox-S	3 Drums	MC145	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
-29	Sludge Cleanup	60 Drums	MC147	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
-30	Wytox-ADP-F	3 Drums	MC148	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84
-31	Waste Oil	800 Gallons	BR131A	Drums	$31.00 per 55 Gal. Drum	$ 560 Full Load	5/17/84
-32	Low Assay, 1-2-4 Triazole	15000 lbs.	MC158	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84

70722A

CS-WI-0000-02205

EXHIBIT B

Waste From Olin Corporation

Wilmington, MA

Waste Stream Identification

5/17/84

UMBER	WASTE STREAM DESCRIPTION	EXPECTED ANNUAL VOLUME	PRODUCT CODE	PACKAGING	**DISPOSAL FEE	*TRANSPORT COST	EFFECTIVE DA OF DISPOSAL TRANSPORTATI FEE
-33	Wytox Liquids	3 Drums	BR121C	Drums	$66.00 per 55 Gal. Drum	$ 560 Full Load	5/17/84
-34	OBSH-SD	3 Drums	MC160	Drums	$42.50 per 55 Gal. Drum	$1,200 Full Load	5/17/84

*Full load constitutes 80, 55 gallon drums. Freight is based on $15.00 per drum to Model City, NY and $7.00 drum to Braintree, IA.

*Does not include any State or Federal taxes.

0722A

... IN EFFECT ON THE DATE OF THE ISSUE OF THIS BILL OF LADING

FROM OLIN CORPORATION GENERATOR

ADDRESS

TELEPHONE

ROUTE

HAZARDOUS WASTE MANIFEST

CS-WI-0000-02205

Exhibit C 5/17/84

EPA I.D. No.

DATE

VEHICLE NO.

PAGE

DO NOT SUBMIT BILL WITHOUT THIS NUMBER

MANIFEST DOCUMENT NUMBER

TRANSPORTER NAME

ADDRESS

EPA I.D. No.

CONSIGNED TO TSDF (Treatment, Storage, or disposal facility) DESIGNATED

EPA I.D. No.

ALTERNATE

FOR CHEMICAL EMERGENCY SPILL, LEAK, FIRE, EXPLOSION OR ACCIDENT CALL: BAWGR NIGHT [illegible]

FREIGHT CHARGES ARE

PREPAID ☐

COLLECT ☐

CARRIER NOTE

IF CHARGES ARE PREPAID MAIL PREPAID FREIGHT BILL TO OLIN CORPORATION 120 LONGRIDGE ROAD STAMFORD, CT. 06904 ACCOUNTS PAYABLE

CARRIER INSTRUCTIONS SEE BELOW

If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier or shipper's weight".

Note: Where the rate is dependent on released value the agreed or declared value of the property is hereby stated by the shipper to be not exceeding 50 CENTS PER POUND

Subject to Section 7 of conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make a delivery of this shipment without payment of freight and all other lawful charges.

OLIN CORPORATION

SIGNATURE OF CONSIGNOR

This shipment is correctly described by the shipment and is shown herein and subject to verification by the governing weighing and inspection bureau.

Olin Corporation

SIGNATURE OF CONSIGNOR

M. No.	No. of Packages	Kind of Packages	HM	DESCRIPTION OF ARTICLES SPECIAL MARKS AND EXCEPTIONS	Weight (Sub. to correction)	Class or Rate	Check Column

CARRIER INSTRUCTION.

CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

Shipper/Generator _____ Date _____

PER _____

This is to certify acceptance of the hazardous waste shipment.

Agent/Transporter _____ Date _____

PER _____

0041-0558

This is to certify acceptance of the hazardous waste for treatment, storage, or disposal.

TSDF _____ Date _____

PER _____

TRANSPORTER COPY

CS-WI-0000-02205

EXHIBIT D

5/17/84

RELEASES

The Contractor shall only accept deliveries of Waste Products under this Agreement that have met the following criteria:

1. Are included in Exhibits A and B, or an amendment thereto, of this Agreement.

2. Are properly identified by product code number and described on a Waste Shipment Manifest.

3. Are properly identified and described on an Olin Release Order (Olin Form OM 216A - Rev. 6/77, a copy of which is attached hereto) which is authorized by one of the following named individuals:

ELEASE ORDER

NO.R [illegible]

COVERS MATERIAL TO BE RELEASED AGAINST A CONTRACT OR BLANKET ORDER. THIS IS NOT A PURCHASE ORDER.

EXHIBIT D Page 2 of 2

TO

CONTRACT OR BLANKET P.O. No.

DATE 5/17/84

CS-WI-0000-02205

LIVER TO

BUYER'S ORDER NO. MUST APPEAR ON ALL PACKAGES, SHIPPING DOCUMENTS, INVOICES AND CORRESPONDENCE. QUANTITY UNITS AND BUYER'S CODE MUST APPEAR ON INVOICES & PACKING LISTS. MAIL INVOICES IN TRIPLICATE AND PROOF OF SHIPMENT TO ACCOUNTING DEPT. AT:

SHIP VIA		DELIVERY DATE
FOB	TERMS	FOR RESALE ☐ YES ☐ NO

ITEM	QUANTITY	UNIT	BUYER'S CODE NO.	DESCRIPTION	ACCOUNTING CHARGE NO.

0041-0560

BY _____

OLIN CORPORATION

OM 216A (REV. 6/77)

OPER. 1. STRIP OFF THESE COPIES WITH CARBON AND FORWARD INTACT TO RECEIVING DEPT.