Buckley & Mann, Inc.
14 Bush Pond Road
Norfolk, MA 02056

March 21, 2001

Department of Environmental Protection
Northeast Regional Office
205A Lowell Street
Wilmington, MA 01887

Enclosed please find a semi-annual Status Report for the Release Abatement Measure at the Buckley & Mann property at 17 Lawrence Street, Norfolk, Massachusetts. The site is Bureau of Waste Site Cleanup #3-0173.

If you have any questions, please contact me at (781) 828-0029 X3427, or (508) 528-4296.

Sincerely,

Stephen L. Mann

RELEASE ABATEMENT MEASURE (RAM) PLAN STATUS REPORT
for
BUCKLEY & MANN, INC., NORFOLK, MASSACHUSETTS

BUREAU OF WASTE SITE CLEAN-UP SITE NUMBER 3-0173

Prepared by

CAMP DRESSER & McKEE INC.
CAMBRIDGE, MASSACHUSETTS

March 2001

Robert A. Dangel
Licensed Site Professional # 7798

William R. Swanson
Licensed Site Professional # 6406

RELEASE ABATEMENT MEASURE (RAM) PLAN STATUS REPORT
BUCKLEY & MANN, INC., NORFOLK, MASSACHUSETTS
BUREAU OF WASTE SITE CLEAN-UP SITE NUMBER 3-0173

1. Previous filing

The original RAM Plan was filed on May 28, 1996, and the revised RAM plan was filed in December 1997. The previous RAM Status report was filed in September 2000.

2. Work since the last report

A first round of soil and groundwater sampling and analysis for the former dyehouse wastewater treatment Lagoons #1 and #2 was completed in October. The soil from the bottom of the Lagoons contains the residual "Source Material", residue from the dyehouse wastewater treatment operations, which ceased in 1986.

The four groundwater samples from October 2000 were analyzed for PAH by Method 8270 C SIM (for low detection limits) as collected, with considerable turbidity. These samples represented the upper bound of soluble PAH compounds, as these sparingly soluble PAH compounds are likely to partition onto the suspended solids, rather than remain in the soluble phase. One of the four samples contained 2-methylnapthalene, at 16 ug/L, in excess of the 10 ug/L MCP GW-1 Method 1 limit. No other PAH in this sample or the other three samples exceeded MCP GW-1 limits.

For the October 2000 soil samples, the only compound exceeding the MCP S-1 limits was 1,1-biphenyl. The S-1 limit for biphenyl is 1 mg/kg. Concentrations in the four samples were 2.6 and 2.5 mg/kg in Lagoon #1 and <0.59 and 1.6 mg/kg in Lagoon #2 soils. Because the MCP Method 1 standard is based on the leaching component, and considering that the soils contain some native organic material (the lagoons were originally constructed in wetlands), CDM recommended that the groundwater in contact with the source material be tested for *soluble* PAH compounds to show whether the target compounds were actually soluble, rather than adsorbed on turbidity.

Sampling and analysis of a second set of groundwater samples from former dyehouse wastewater treatment Lagoons #1 and #2 groundwater was completed December 2000. The objective of this sampling round was to measure soluble PAH compounds in groundwater contacting the soil containing the "Source Material". For the December 2000 samples, CDM used coagulation and settling to clarify the water prior to analysis, rather than filtration. Experience on other projects (with PCB, which has similar water solubility to some PAH compounds) has shown that the paper filter media adsorbs sparingly soluble compounds and thereby causes artificially low reports on "soluble" concentrations. This problem is minimized by alum coagulation and settling (or centrifugation).

Concentration of PAH compounds in the four December 2000 groundwater samples were all below MCP Method 1 limits. This shows that PAH compounds in soil found slightly above the Method 1 S-1 limits are bound to the soil, and not mobile in the groundwater. Consequently, the leaching component, which controls the S-1 limits, may be adjusted under MCP Risk Assessment Method 2 for this site. This will allow the site to achieve a condition of No Significant Risk and a Class A Response Action Outcome.

3. Work planned

The following tasks remain to complete the work in 2001:

- Complete a ground survey to establish the boundaries for the Activity and Use Limitation.

- Complete an Activity and Use Limitation and file the Release Abatement Measure Completion Report and Response Action Outcome Report with the Department of Environmental Protection. The reports will contain the complete results for the October and December 2000 sampling and analyses.

- Obtain a Certificate of Compliance from the Norfolk Conservation Commission for work subject to the Order of Conditions for the consolidation area cover. Per the Conservation Commission's request, the Activity and Use under the MCP will be completed before the Commission will issue a Certificate.

Massachusetts Department of Environmental Protection **BWSC-106**
Bureau of Waste Site Cleanup

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 173

A. SITE LOCATION:

Site Name: (optional) Buckley and Mann, Inc.

Street: 17 Lawrence Street Location Aid: Bush Pond

City/Town: Norfolk ZIP Code: 02056-0000

☑ Check here if a Tier Classification Submittal has been provided to DEP for this Release Tracking Number.

Related Release Tracking Numbers That This RAM or URAM Addresses:

B. THIS FORM IS BEING USED TO: (check all that apply)

☐ Submit a **RAM Plan** (complete Sections A, B, C, D, E, F, J, K, L and M).

☐ Check here if this RAM Plan is an update or modification of a previously approved written RAM Plan. Date Submitted:

☑ Submit a **RAM Status Report** (complete Sections A, B, C, E, J, K, L and M).

☐ Submit a **RAM Completion Statement** (complete Sections A, B, C, D, E, G, J, K, L and M).

☐ Confirm or Provide **URAM Notification** (complete Sections A, B, H, K, L and M).

☐ Submit a **URAM Status Report** (complete Sections A, B, C, E, J, K, L and M).

☐ Submit a **URAM Completion Statement** (complete Sections A, B, C, D, E, I, J, K, L and M).

You must attach all supporting documentation required for each use of form indicated, including copies of any Legal Notices and Notices to Public Officials required by 310 CMR 40.1400.

C. SITE CONDITIONS:

☑ Check here if the source of the Release or Threat of Release is known.

If yes, check all sources that apply: ☐ UST ☐ Pipe/Hose/Line ☐ AST ☐ Drums ☐ Transformer ☐ Boat ☐ Tanker Truck ☐ Vehicle ☑ Other Specify: Bldg debris, coal ash, and textile plant waste

Identify Media and Receptors Affected: (check all that apply) ☐ Air ☐ Groundwater ☐ Surface Water ☐ Sediments ☑ Soil ☐ Wetlands ☐ Storm Drain ☐ Paved Surface ☐ Private Well ☐ Public Water Supply ☐ Zone 2 ☐ Residence ☐ School ☐ Unknown ☐ Other Specify:

Identify Release and/or Threat of Release Conditions at Site: (check all that apply)

☐ 2 and 72 Hour Reporting Condition(s) ☑ 120 Day Reporting Condition(s) ☐ Other Condition(s)

Describe: Metals, PAH, and TPH from building debris, coal ash and textile plant

RAMs may be conducted concurrently with an IRA only with written DEP approval
URAMs may not be conducted if any 2 or 72 Hour conditions exist at the site.

Identify Oils and Hazardous Materials Released: (check all that apply) ☐ Oils ☐ Chlorinated Solvents ☑ Heavy Metals ☐ Others Specify: PAH and TPH

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply)

☐ Assessment and/or Monitoring Only

☑ Excavation of Contaminated Soils

☐ Re-use, Recycling or Treatment

○ On Site ○ Off Site Est. Vol.: _____ cubic yards

Describe:

☐ Store ○ On Site ○ Off Site Est. Vol.: _____ cubic yards

☐ Deployment of Absorbant or Containment Materials

☐ Temporary Covers or Caps

☐ Bioremediation

☐ Soil Vapor Extraction

☐ Structure Venting System

☐ Product or NAPL Recovery

RECEIVED
MAR 26 2001
DEP
NORTHEAST REGIONAL OFFICE

SECTION D IS CONTINUED ON THE NEXT PAGE.

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 173

D. DESCRIPTION OF RESPONSE ACTIONS (continued):

- [x] Landfill (●) Cover ( ) Disposal Est. Vol.: 315 cubic yards
- [ ] Removal of Drums, Tanks or Containers
  - Describe:
- [ ] Removal of Other Contaminated Media
  - Specify Type and Volume:
- [x] Other Response Actions Describe: On-site consolidation and covering of 4,550 cy soil

- [ ] Groundwater Treatment Systems
- [ ] Air Sparging
- [ ] Temporary Water Supplies
- [ ] Temporary Evacuation or Relocation of Residents
- [ ] Fencing and Sign Posting

See 310 CMR 40.0442 for limitations on the scope and type of RAMs.
See 310 CMR 40.0464 for performance standards for URAMs.

- [ ] Check here if this RAM or URAM involves the use of Innovative Technologies. DEP is interested in using this information to aid in creating an Innovative Technologies Clearinghouse.
  - Describe Technologies:

E. TRANSPORT OF REMEDIATION WASTE:

(if Remediation Waste has been sent to an off-site facility, answer the following questions)

Name of Facility: Chemical Waste Management- Turnkey Facility

Town and State: Rochester, NH

Quantity of Remediation Waste Transported to Date: 315 Tons (no change from previous semi-annual Status Rpt)

F. RAM PLAN:

- [ ] Check here if this RAM Plan received previous oral approval from DEP as a continuation of a Limited Removal Action (LRA).
  - Date of Oral Approval:
- [ ] If a RAM Compliance Fee is required, check here to certify that the fee has been submitted. You **MUST** attach a photocopy of the payment. See 310 CMR 40.0444(2) to learn when a fee is not required.
- [ ] Check here if the RAM Plan is proposed for a Transition Site. If this is the case, you may need to attach an LSP Evaluation Opinion prior to undertaking the RAM, if not previously provided. See 310 CMR 40.0600 for further information about Transition Sites.

G. RAM COMPLETION STATEMENT:

- [ ] If a RAM Compliance Fee is required in connection with submission of the RAM Completion Statement, check here to certify that the fee has been submitted. You **MUST** attach a photocopy of the payment. You owe this fee when submitting a RAM Completion Statement if you received oral approval of a RAM that continued an LRA, and have NOT previously submitted a RAM Plan and accompanying fee.

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the RAM Completion Statement, you must submit a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the RAM Completion Statement.

H. URAM NOTIFICATION:

Identify Location Type: (check all that apply)
- [ ] Public Right of Way
- [ ] Utility Easement
- [ ] Private Property

Identify Utility Type: (check all that apply)
- [ ] Sanitary/Combined Sewerage
- [ ] Water
- [ ] Drainage
- [ ] Natural Gas
- [ ] Telephone
- [ ] Steam Lines
- [ ] Telecommunications
- [ ] Electric
- [ ] Other Specify:

- [ ] Check here if you provided DEP with previous oral notification of this URAM.
  - Date of Oral Notice:
- [ ] Check here if the property owner was NOT contacted prior to initiation of the URAM. If this is the case, you must attach an explanation of why the owner was not contacted, including the date and time when contact ultimately occurred.
- [ ] Check here if this URAM will occur in connection with the construction of new public utilities. If this is the case, document the nature and extent of encountered contamination, the scope and expense of necessary mitigation and the benefits and limitations of project alternatives.

With the exception stated below, the person undertaking the URAM must provide the name and license number of an LSP engaged or employed in connection with the URAM:

LSP Name: LSP License Number:

LSP information is not required if the URAM is limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated either by a Hazardous Material or a mixture of a Hazardous Material and Oil.

Massachusetts Department of Environmental Protection **BWSC-106**
Bureau of Waste Site Cleanup

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 173

I. URAM COMPLETION STATEMENT:

☐ Check here if this URAM was limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated by either a Hazardous Material or a mixture of a Hazardous Material and Oil.

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the URAM Completion Statement, you must submit either a Release Abatement Measure (RAM) Plan or a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the URAM Completion Statement.

J. LSP OPINION:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and (iii) the provisions of 309 CMR 4.03(5), to the best of my knowledge, information and belief,

> *if Section B of this form indicates that a **Release Abatement Measure Plan** is being submitted,* the response action(s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> *if Section B of this form indicates that a **Release Abatement Measure Status Report** or a **Utility-Related Abatement Measure Status Report** is being submitted,* the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> *if Section B of this form indicates that a **Release Abatement Measure Completion Statement** or a **Utility-Related Abatement Measure Completion Statement** is being submitted,* the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

☐ Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.

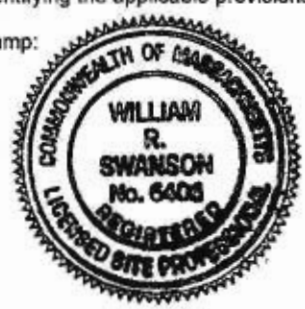
LSP Name: William R. Swanson LSP #: 6406 Stamp:

Telephone: 617-452-6274 Ext.: 8458

FAX: (optional) 617-452-8274

Signature:

Date: 3/20/01



An LSP Opinion is not required for a Utility-Related Abatement Measure Notification.

An LSP Opinion is not required for a URAM Completion Statement if the URAM is limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated either by Hazardous Material or a mixture of Hazardous Material and Oil.

K. PERSON UNDERTAKING RAM OR URAM:

Name of Organization: Buckley and Mann Inc.

Name of Contact: Richard Mann/ Stephen Mann Title: Owners

Street: 15 Bush Pond Lane

City/Town: Norfolk State: MA ZIP Code: 02056-0000

Telephone: 508-528-4296 Ext.: FAX: (optional)

☐ Check here if there has been a change in person undertaking the RAM or URAM.

Massachusetts Department of Environmental Protection **BWSC-106**
Bureau of Waste Site Cleanup

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 173

L. RELATIONSHIP TO SITE OF PERSON UNDERTAKING RAM or URAM: (check one)

☑ RP or PRP Specify: ◉ Owner ○ Operator ○ Generator ○ Transporter Other RP or PRP: _____

☐ Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ Any Other Person Undertaking RAM or URAM Specify Relationship: _____

M. CERTIFICATION OF PERSON UNDERTAKING RAM OR URAM:

I, STEPHEN L. MANN, 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 transmittal form, (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 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.

By: _____ Title: TREASURER
(signature)

For Buckley and Mann Inc. Date: 3/21/01
(print name of person or entity recorded in Section K)

Enter address of person providing certification, if different from address recorded in Section K:

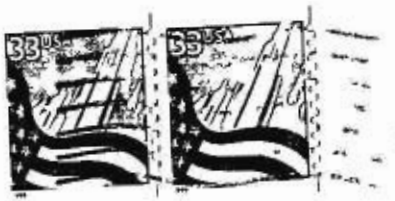
Street: N/A

City/Town: _____ State _____ ZIP Code: _____

Telephone: _____ Ext. _____ FAX: (optional) _____

YOU MUST COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Buckley & Mann, Inc.
14 Bush Pond Road
Norfolk, MA 02056



Department of Environmental Protection
Northeast Regional Office
205A Lowell Street
Wilmington, MA 01887

01887X2941 03

SECTION VIII
WAIVER APPLICATION DISPOSITION
(For DEP Use Only)

SCANNED

1. **Application Number:** 92-3-0173-1 **Date Application Received:** 6/2/92

2. **Applicant Name:** Mr. Richard Mann, Buckley and Mann, Inc.

   Applicant Address: 17 Lawrence Street

   Norfolk (City/Town) MA (State) 02056 (Zip)

3. **Site Name:** Buckley and Mann

4. **Site Address:** 17 Lawrence Street Norfolk (City/Town)

5. **Site ID Number:** 3-0173

6. **Disposition**

   Waiver Application Determination. (Check One)

   [X] **Approved.**

   Conditions of Approval: 1) See addendum conditions on reverse side
   2) See conditions as outlined in attached letter, dated October 5, 1992

   [ ] **Denied.**

   Basis for denial:

Application reviewed by: Stephen M. Johnson
Acting Chief, Site Management Branch

Signature: Stephen M. Johnson **Date:** 10/5/92

Acceptance of Waiver Application Disposition

I understand and agree to any and all additional conditions specified above for an approved application.

Richard D Mann 2/22/93
(Signature of Applicant) (Date)

Applicant: For approved waiver applications, sign and date both disposition forms. Return one completed copy to the Department within 60 days of the approval date, retain the second copy for your records. **NOTE:** The approval will become invalid if the disposition form, signed and dated by the applicant, is not received by the Department within 60 days of the approval date.

Send completed form to:

Department of Environmental Protection
Northeast Regional Office
10 Commerce Way
Woburn, MA 01801
Attn: Site Management/ Waiver Unit

3-0176
Norfolk

Buckley
& Mann
INCORPORATED
ESTABLISHED 1901

22 February 1993

Mr. Edward J. Weagle
Environmental Geologist
Dept. of Environmental Protection
10 Commerce Way
Woburn, MA 01801

Re: Waiver Application #92-3-0173-1

Dear Mr. Weagle:

Enclosed is the original signed Waiver Application Disposition which we inadvertently failed to forward to you.

Thank you for accepting it. We will proceed with the clean-up of the site in accordance with the approval of the waiver.

If you have any questions, please call me.

Very truly yours,

Richard D. Mann
RDM/lvp
encl

cc: Robert Dangel
Camp Dresser & McKee Inc.
840 Memorial Drive
Cambridge, MA 02139

RECEIVED
93 FEB 23 A 11: 22
DEP
NORTHEAST REGIONAL OFFICE

Factory: 17 Lawrence Street, Norfolk, Massachusetts 02056 □ Mail: Box 409, Franklin, Massachusetts 02038
Telephone: (508) 528-0695 □ Telex: 4931680 □ Fax: (508) 528-1361

File

Commonwealth of Massachusetts

Executive Office of Environmental Affairs

Department of Environmental Protection

Metro Boston/Northeast Regional Office

William F. Weld
Governor
Daniel S. Greenbaum
Commissioner

February 1, 1993

Mr. Richard Mann
President
Buckley & Mann, Inc.
17 Lawerence Street
Norfolk, MA 02056

RE: **NORFOLK -**
Buckley & Mann
17 Lawrence Street
Rejected Waiver Application
Number 92-**3-0173**-1

Dear Mr. Mann,

The Department of Environmental Protection (the Department) granted a Waiver of Approvals for the above-referenced disposal site on October 5, 1992. A review of our records indicate this office has not yet received a copy of the signed Waiver Application Disposition. Please note a copy of the disposition, signed and dated by the applicant, must be returned to the Department's Northeast Regional Office within sixty (60) days of the date of approval in order for it to be considered Accepted.

The approval becomes invalid if the disposition form, signed and dated by the applicant, is not received within sixty (60) days of the approval date. In light of the above, the waiver application number 92-3-0173-1 is considered Rejected by the applicant.

If you have any questions regarding the status of the above-referenced Waiver Application, or if you don't agree with this determination, please call or contact either Edward Weagle or Ida Babroudi on or before February 16, 1993, at the letterhead address or by calling (617) 935-2160.

Sincerely,

Edward J. Weagle
Environmental Geologist

Ida Babroudi
Environmental Engineer
Waiver Unit Supervisor

cc: Norflok Board of Health

10 Commerce Way • Woburn, Massachusetts 01801 • FAX (617) 935-6393 • Telephone (617) 935-2160

File Copy

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection
Metro Boston/Northeast Regional Office

William F. Weld
Governor
Daniel S. Greenbaum
Commissioner

October 5, 1992

Mr. Richard Mann
Buckley and Mann, Inc.
17 Lawrence Street
Norfolk, MA 02056

RE: NORFOLK - Buckley & Mann
17 Lawrence Street
DEP Case #: 3-0173
Waiver Application

Dear Mr. Mann:

The Department has completed a review of the Waiver Application for the contaminated property located at 17 Lawrence Street in Norfolk, submitted under the provisions of 310 CMR 40.537, of the Massachusetts Contingency Plan (the MCP). This waiver allows the applicant, Buckley and Mann, Inc., along with its environmental consultant, Camp Dresser & McKee (CDM), to assess and remediate oil and/or hazardous material contamination without the direct oversight of the Department.

The scope of CDM's site investigations to date has focused on the wastewater lagoons and their impact on soil, groundwater, and surface water quality in the immediate area of the lagoons. The Buckley and Mann property is approximately 140 acres in area. CDM's subsurface investigations have encompassed only a small percentage of the entire property, due to the fact that the majority of the property has never been developed, and there is no reason to believe that oil or hazardous materials (OHM) have been used, treated, or disposed of there.

The Department concurs that the lagoons are a primary source of OHM at the site, and should be assessed as such. However, the Department suggests that other areas of the property be investigated as a part of the Phase II Comprehensive Site Investigation. The Department suggests that additional field investigations are needed in the area of the buildings, specifically with regard to the present and former underground storage tanks (UST's) as potential sources of OHM.

The Department also suggests that an additional groundwater sampling round, which includes the water supply wells on the property, be conducted during Phase II. This should be done in order to confirm that groundwater at the site has not been impacted by contaminants, as the 1986 analyses indicate.

Enclosed please find two copies of the approved Waiver Application Disposition. Please sign and date one copy and return it to the Department's Northeast Regional Office within 60 days. Retain the second copy for your records. On the reverse side of each copy is an addendum to the disposition, which details the general conditions of approval and the responsibilities of the waiver recipient.

Please note that the approval will become invalid if a copy of the disposition form, signed and dated by the applicant, has not been received by the Department within 60 days of the waiver approval date.

Should you have any questions please contact Thomas DiPersio at the letterhead address, or by telephoning (617)935-2160 x164.

Sincerely,

Thomas P. DiPersio
Environmental Engineer

Stephen M. Johnson
Acting Chief
Site Management Branch

enclosures

cc (without encl.):

Camp Dresser & McKee, Inc., Attn: Robert A. Dangel
Ten Cambridge Center, Cambridge, MA 02142
DEP Boston, BWSC, Attn: Elaine Jonnet
Norfolk Board of Health

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection
Metro Boston/Northeast Regional Office

William F. Weld
Governor
Daniel S. Greenbaum
Commissioner

October 5, 1992

Mr. Richard Mann
Buckley and Mann, Inc.
17 Lawrence Street
Norfolk, MA 02056

RE: NORFOLK - Buckley & Mann
17 Lawrence Street
DEP Case #: 3-0173
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Sincerely,

Thomas P. DiPersio
Environmental Engineer

Stephen M. Johnson
Acting Chief
Site Management Branch

enclosures

cc (without encl.):

Camp Dresser & McKee, Inc., Attn: Robert A. Dangel
Ten Cambridge Center, Cambridge, MA 02142
DEP Boston, BWSC, Attn: Elaine Jonnet
Norfolk Board of Health

MEMORANDUM

TO: File No. 3-0173-1, Buckley & Mann, Inc.
17 Lawrence Street, Norfolk

FROM: Thomas P. DiPersio, Environmental Engineer
SARSS Contractor, PEER Consultants, P.C.

DATE: September 28, 1992

SUBJECT: Waiver Reconnaissance/Site Summary

On Wednesday, August 19, 1992, at 8:30 am, Tom DiPersio of PEER Consultants, P.C. met with Robert Dangel of Camp Dresser & McKee Inc. (CDM), and Richard and Stephen Mann of Buckley & Mann, Inc., at the property located at 17 Lawrence Street in Norfolk (the site). The conditions were sunny, with temperatures in the seventies.

The text of this memo is based upon information obtained during the site reconnaissance, and provided in reports and correspondences located on file with the Department, and submitted as a part of the Waiver Application (the reports).

The subject site consists of a one hundred-forty acre, primarily undeveloped, property located in a residential and undeveloped area of Norfolk. Buckley & Mann, Inc. has manufactured textiles at the site for approximately 100 years. Certain manufacturing operations conducted during the course of the site's history have involved wastewater streams. Four lagoons (three which have actually been used), associated with historical wastewater discharges, are located at the site. The lagoons received wastewater primarily from two facility operations: the dyeing processes and the carbonization processes. The dyeing process historically involved chrome dyes, and more recently, 'disperse' dyes and some basic and acid dyes. The dyehouse discharged approximately 30,000 to 40,000 gallons per week of wastewater. The carbonizer process (which ceased in 1965) consisted of passing garments through an acidic steam to reclaim the wool. Solid residues (threads, buttons, zippers, etc.) were disposed of on site, and the liquid rinse water was discharged to the carbonizer lagoon. No wastewaters have been disposed of on site since 1986. Refer to the attached figure for the locations of the lagoons and other important site features.

The Mill River flows from south to north through the site. The river was dammed, creating Bush Pond, during the 19th century to provide power to the plant through a water wheel and tail race. The tail race still exists, but is not used and does not receive

any water other than surface runoff. CDM reports that groundwater converges toward the river from either side of the site. It also appears that groundwater has an upward gradient, toward the river, at the site. The depth to groundwater ranges from approximately 3 to 9 feet.

Several private wells exist in the vicinity of the site. The residences along Lawrence and Park Streets reportedly receive their water from private bedrock wells. Two private wells also exists on the subject site. CDM contends that, given the level of groundwater contamination detected on site and the hydrologic relationship between any private wells and the site, none of the nearby private wells are, or could be, impacted by on site contamination.

The application materials were reviewed by the Department's Division of Water Supply (refer to the memo from James Persky, DEP-DWS-NERO, dated September 15, 1992). Mr. Persky concludes that "the contaminant levels found in groundwater at the site do not pose a threat to any of the nearby private wells".

The Mill River appears to be the only other potential sensitive receptor associated with the site.

There are presently two fuel oil underground storage tanks (UST's) in use on the site. Three other UST's (gasoline, diesel fuel, mineral oil) were removed in 1986. The primary focus of CDM's environmental assessments was the lagoons. Information presented at the request of the writer revealed that no contamination was encountered upon excavation of the gasoline or mineral oil UST's. Between three and four yards of contaminated soil were excavated with the diesel UST. No other information was available regarding the UST removals.

Sludge (approximately 100 cubic yards) from Lagoon #1 was scraped and stockpiled once, prior to 1975. CDM reports that this material "has thoroughly decomposed, and has the appearance of clean sand". In 1986 the trench leading from the dyehouse to Lagoon #1 was scraped, and 200 cubic yards were stockpiled. A third stockpile was created when Lagoon #2 was scraped. The stockpiles still remain on site.

CDM conducted field investigations at the site in 1986. These activities predated the MCP, and the Department's Division of Water Pollution Control (DWPC) was involved. CDM has subsequently concluded that the remainder of the remedial work should continue under the MCP, based upon the absence of sludge in the lagoons, and the presence of petroleum and metals in the lagoon subsoils.

CDM installed five shallow overburden monitoring wells, as well as one bedrock well, on site in 1986. Soil, groundwater, and surface water sampling was conducted, including soil samples from the lagoon bottoms.

Geology observed in soil borings conducted by CDM is reported to be generally sands and gravels, with some silt.

CDM reports that there are five areas on the site with contaminant concentrations above background levels: 1) the soils in the bottom of the Carbonizer Lagoon; 2) the Carbonizer residue disposal area; 3) the soils in the bottom of Lagoon #1; 4) the soils in the bottom of Lagoon #2; and 5) excavated soils stockpiled to the west of Lagoon #1.

CDM's soil, groundwater and surface water sampling results are presented in the attached tables. In summary, elevated concentrations of metals were detected in soil samples: **cadmium** (up to 28 mg/kg - SS-1), **chromium** (up to 1,300 mg/kg - Lagoon #1 sludge), **lead** (up to 2,440 mg/kg - Lagoon #1 soil pile, 1991 sample), **zinc** (up to 8,200 mg/kg - Carbonizer residue disposal area). **TPH** was detected in soil samples at concentrations of up to 3,350 mg/kg (Lagoon #1 soil pile, 1991 sample). Groundwater and surface water does not appear to have been significantly impacted.

Water samples were collected from the two water supply wells located on the Buckley & Mann property (a bedrock well and a 'dug' well), as well as the bedrock well located at 25 Lawrence Street, in 1986. Analyses revealed no VOC's and no B/N's above MDL's, and no metals above drinking water standards.

The developed portions of the property, and some of the undeveloped portions, were visually inspected by the writer, including the lagoons, the tail race, the soil stockpiles, the disposal area, and the pond. No overt evidence of oil or hazardous materials contamination was evident. The three soil stockpiles (which are over 17, 6, and 4 years old, respectively), as well the disposal area, were completely overgrown with vegetation.

CDM plans to excavate the remaining contaminated soils for aerobic degradation of the petroleum hydrocarbons, prior to disposal of soils containing metals above background concentrations.

The site is situated in a valley, with steep hills rising upwards of seventy-five feet on the east and west sides of the property. See the attached figure for an approximation of topographical contours. The nearby residences to the east and west are situated above the site, at the top of the hills.

Conditions observed during the site reconnaissance were not inconsistent with reports submitted to the Department by CDM. In summary, the nearby private water supply wells appear to be the only complication associated with the granting of a waiver for the subject site. Groundwater does not appear to have been

impacted at the site, although no groundwater sampling has been conducted since 1986 (reportedly no wastewater discharge has occurred since that time, as well). A confirmatory groundwater sampling round may be warranted.

No other complications were observed which would preclude the processing of this Waiver Application.

cc: PEER Consultants

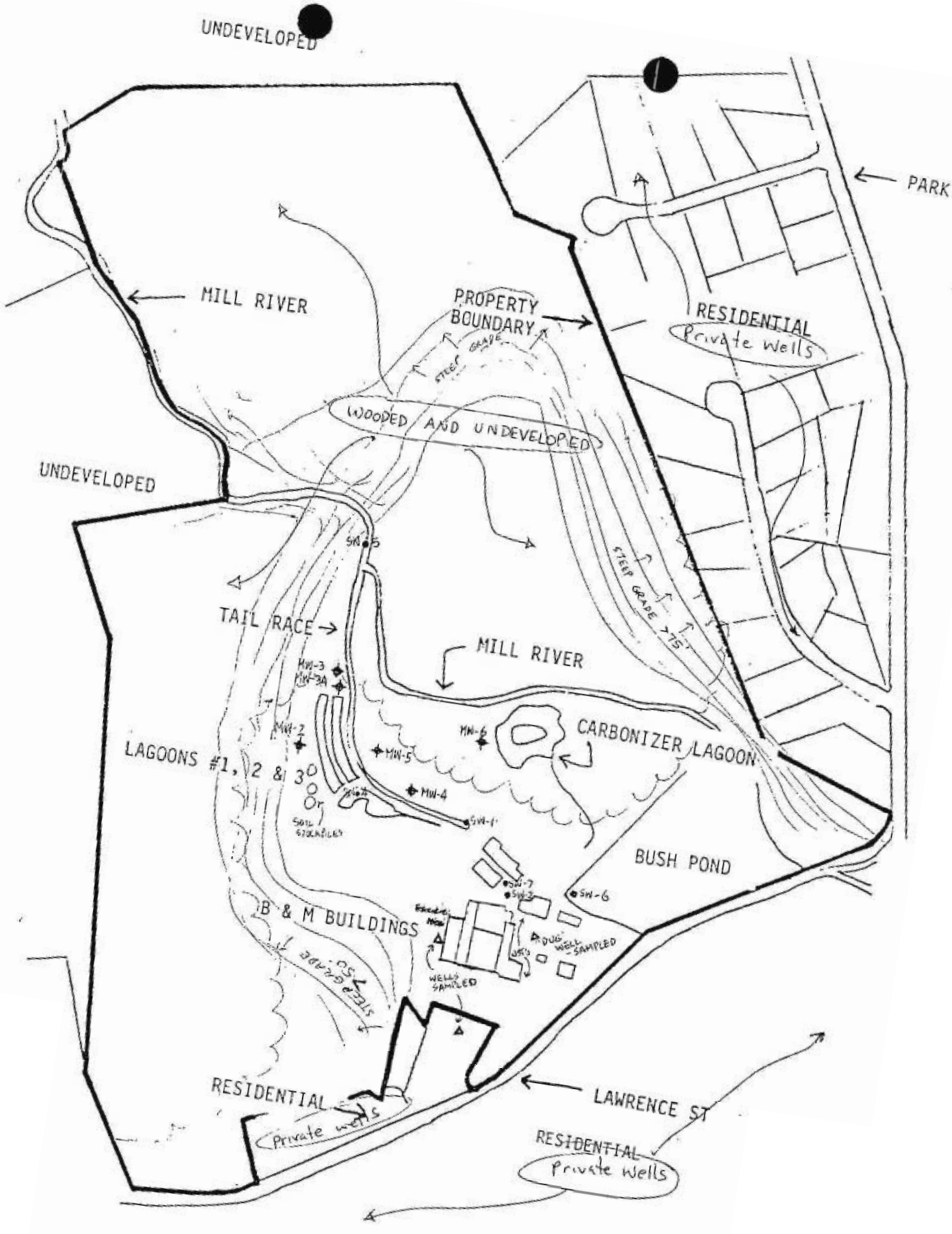


FIGURE 1
BUCKLEY & MANN PROPERTY BOUNDARY
AND ADJACENT LAND USE

Scale 1" is about 430'

TABLE 1

SUMMARY OF ANALYTICAL RESULTS ABOVE MDEP REPORTABLE CONCENTRATIONS FOR SOIL
(mg/kg)

Location Sample ID and (date)	Cr	Pb	Zn	TPH	Total B/Ns	Total VOCs	Ref. No.*
Carbonizer Lagoon							
SS-5 (1986)	450	670					1
Carbonizer Residue Disposal Area							
SS-1 (1986)	1000	1200	8200				1
Lagoon #1 Soils							
SS-4 (1986)	270				92		1
SS-4A (1986)	1300				172	4.2	1
(1988)				210			2
1A+1B (1991)	210			350			4
Lagoon #2 Soils							
SS-3 (1986)	430						1
2A+3B (1991)				1320			4
2B (1991)				590			4
3B (1991)				740			4
4A+4B (1991)				440			4
Trench soils piled W. of Lagoon #1 (1990)				440	9		3
Lagoon #1 soils piled W. of Lagoon #1 (1990)				2600	132		3
5 (1991)		2440		3350			4
MDEP Reportable Concentration	100	200	5000	300			

* References numbers listed in the text at the beginning of Section 5.0.

TABLE 3

METALS

(All Concentrations in mg/l)

	Bush Pd. SW-6	Trailrace Head SW-1	Mill River SW-5	Upgradient Well MW-2	Bedrock Well 25 Law. St. GW-1	Bedrock Well B & M GW-2	Dug Well B & M GW-3
Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Al	0.13	0.29	<0.1	0.21	<0.1	0.22	0.11
As	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Cd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fe	0.13	2.8	0.16	<0.025	0.44	<0.025	0.13
Na	20	20	21	8.1	14	21	31
Pb	<0.003	0.004	<0.003	<0.003	0.004	0.006	0.005
Se	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zn	<0.02	<0.02	<0.02	<0.02	0.02	0.02	<0.02
Hg		<0.0004					

SW-2 Boiler Blowdown Fe 4.5, Na 260

TABLE 3 (Cont'd)

METALS

(All concentrations in mg/kg)

	Soils SS-1	Soils SS-2	Lagoon #1 Sludge SS-4	Lagoon #1 Sludge SS-4A	Lagoon #2 Sludge SS-3	Carbonizer Lag. Sludge SS-5	Carbonizer Lag. Sludge SS-5A
Ag	16	<1.0	<1.0	<1.0	<1.0	5.7	<1.0
Al	27,000	11,000	7600	5900	5900	6700	13,000
As	21	12	2.1	2.9	1.3	4.7	2.7
Cd	28	<2.5	<2.5	<3.8	<2.8	18	2.9
Cr	1000	2100	270	1300	430	450	62
Fe	110,000	13,000	10,000	8400	7700	7600	5800
Na	1300	97	250	850	311	200	96
Pb	1200	38	12	19	12	670	88
Se	0.35	0.50	<0.19	0.57	<0.21	0.97	0.44
Zn	8200	110	930	4600	230	920	260

TABLE 3 (Cont'd)

METALS

(All concentrations in mg/l)

	MW-3	Bedrock Well MW-3A	MW-4	MW-5	MW-6	Lagoon #1 SW-4	Lagoon #2 SW-3
Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Al	0.15	<0.1	0.12	0.31	0.32	0.61	0.27
As	<0.16	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Cd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.025	<0.025	<0.025	<0.025	<0.025	0.72	0.09
Fe	<0.025	<0.025	0.11	0.96	1.9	0.76	2.1
Na	9.5	8.3	6.1	9.1	18	180	73
Pb	<0.003	<0.003	0.007	<0.003	0.003	0.03	0.009
Se	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zn	0.03	<0.02	<0.02	<0.02	<0.02	0.23	0.10

TABLE 4
VOLATILE ORGANIC COMPOUNDS
(All concentrations in ug/l for water and ug/kg/ for soil and sludge)

	Bush Pd. SW-6	Tailrace Head SW-1	Mill River SW-5	MW-2	Bedrock Well 25 Law. St. GW-1	Bedrock Well B & M GW-2	Dug Well B & M GW-3
Detection Limit	10	10	10	10	10	10	10
None	*	*	*	*	*	*	*

	MW-3	Bedrock Well MW-3A	MW-4	MW-5	MW-6	Lagoon #1 SW-4	Lagoon #2 SW-3
Detection Limit	10	10	10	10	10	10	10
None	*	*	*	*	*	*	*
1,1,1-Trichloroethane						P	
Toluene						P	
Xylenes						45	

	Soils SS-1	Lagoon #1 Sludge SS-4A	Carbonizer Lag. Sludge SS-5	Carbonizer Lag. Sludge SS-5A	Septic Tank ST-1	Septic Tank ST-2	Septic Tank ST-3
Detection Limit	25	45	25	25	10	10	10
None	*		*	*	*	*	*
Trichloroethene		45					
Benzene		P					
1,1,2,2-Tetrachloroethene		P					
Toluene		150				91	
Chlorobenzene		1100					
Ethyl benzene		860					
Xylenes		2100				20	

* None - No priority pollutants and no other compounds detected.
P = Present, but at a concentration below the detection limit.

TABLE 5
BASE/NEUTRAL EXTRACTABLE COMPOUNDS
(All concentrations in ug/l)

	Tailrace Head SW-1	MW-2	Bedrock Well 25. Law. St. GW-1	Bedrock Well B & M GW-2	Dug Well B & M GW-3	MW-3	Bedrock Well MW-3A	MW-5
Detection Limit	10	10	10	10	10	10	10	
None	*		*	*	*			
Benzamide N-(1,1-dimethylethyl) -4-Methyl-		6						27
Benzenesulfonamide, N-Butyl						32	11	

*None - No priority pollutants and no other compounds detected.

TABLE 5 (Cont'd)
BASE/NEUTRAL EXTRACTABLE COMPOUNDS

	Lagoon #2 Water SW-3 ug/l	Lagoon #1 Sludge SS-4 ug/kg	Lagoon #1 Sludge SS-4A ug/kg	Septic Tanks ST-C ug/l
Detection Limit	10	3300	1700	10
Priority Pollutants				
1,3-Dichlorobenzene			3200	
1,4-Dichlorobenzene			9100	34
1,2-Dichlorobenzene			5700	
Hexachloroethane	22			
1,2,4-Trichlorobenzene		1600	61,000	
Napthalene	50	10,000	8700	
Acenaphthene	73	8600	5300	
Fluorene	47	3400		
Phenanthrene	33			
Other Compounds				(See Appendix B)
Benzamine	53			
Benzene, 2-ethyl-1,4Dimethyl-	95	7700	3800	
Napthalene, 2-Methyl-	250	11,500	13,000	
1,1-Biphenyl	340	23,000	29,000	
Heptadecane	150	7000	6500	
Dibenzofuran	50	4700		
Isoquinoline		1400		
Naphthalene,2,3-Dimethyl		1300		
Naphthalene,1,2-Dimethyl		2100		
Phenol, 4-Nonyl		10,000	11,000	
Benzene,1,2,3-Trichloro-			4700	
Benzene, 1,2,3,5-Tetramethyl			5400	
Phenol, 4-(2,2,3,3-Tetramethylbutyl)-			6300	

WAIVER RECONNAISSANCE CHECKLIST

TOWN/SITE: NORFOLK / BUCKLEY & MANN, INC. WAIVER NUMBER: 3-0173

STAFF PERSON: Thomas DiPersio DATE: 8/19/92

(1) *ADDRESS – Is the property/site address correct?*..... (yes) no

(2) *WALKOVER/CONSULTANT INPUT – Walk the site, noting pertinent features, topography, locations of source areas, monitoring wells. Try to integrate written (report) information with visual observation, to (1) get a better understanding of site/contaminant conditions, and potential pollutant receptors, and (2) to confirm that site conditions are not inconsistent with what has been presented in report submittals. Question consultant, where necessary to resolve old or newly discovered issues. REMENBER WAIVER OBJECTIVES: THE SITE DOES NOT NEED TO BE FULLY CHARACTERIZED AT THIS POINT IN THE PROCESS; WE NEED JUST ENOUGH INFORMATION TO CLASSIFY SITE, AND FEEL REASONABLY CERTAIN THAT THE APPLICANT/CONSULTANT APPEAR TO BE ON THE "RIGHT TRACK".*

Where appropriate, screen headspace in key g.w. monitoring wells with PID meter. The purpose of this action is to see if headspace results seem to be consistent with reported information. Key problem areas: Positive headspace reading in well where VOCs were not reported (perhaps leading edge of plume), high readings (hundreds of ppm v/v) or strong odors indicating floating product (where none was reported).

a. *Was consultant present during inspection?*..... (yes) no

b. *Were site conditions INCONSISTENT with submitted reports?*..... (NO) YES
(If yes, explain fully in site reconnaissance memo)

(2) *PROBLEMS – Don't spend a lot of time looking, but note if:*

a. *Unreported drums with unidentified origin or contents?*..... yes (no)

b. *Contaminated soil stockpiles present more than 4 months?*..... (yes) no
(IF UNCOVERED, REQUIRE THAT THEY BE COVERED IMMEDIATELY)

(See Memo)

c. *Discharge pipes of unknown origin/exhibiting contamination?*..... yes (no)
(IF YES, NOTIFY DEP SUPERVISOR UPON RETURN TO OFFICE)

d. *Surficial and/or other contamination not addressed in submitted reports?*.....yes (no)

e. *Vent pipes indicating unidentified/unreported UST?*..... yes (no)

f. *Does there appear to be any schools near (<500 ft) the site?*..... yes (no)

(over)

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection
Metro Boston/Northeast Regional Office

William F. Weld
Governor
Daniel S. Greenbaum
Commissioner

MEMORANDUM

September 15, 1992

TO : Ida Babroudi, Waiver Unit, Site Assessment, NERO
FROM : James H. Persky, Environmental Analyst, Water Supply, NERO JHP
THRU : Chester Masel, Chief, Water Supply, NERO

SUBJECT : **WAIVER REVIEW**--Buckley and Mann, Inc., 17 Lawrence Street, Norfolk, MA (Case No. 3-0173)

The Division of Water Supply has reviewed the available information on the subject site. There are no public water supplies within one-half mile of the site. The site does not pose a threat to any public water supply. The contaminant levels found in groundwater at the site do not pose a threat to any of the nearby private wells (only one round of groundwater sampling was done, in 1986).

1991 analyses indicate that some elevated soil concentrations of TPH and trace metals remain at the site. The RP has not yet determined whether soil removal will be necessary.

PCBs were detected in May 1992 soil samples near the former "Carbonizer." Groundwater at the site has not been tested for PCBs. The only monitoring well near the Carbonizer sample sites is well MW-6. It may be worthwhile to test this well for PCBs.

cc: Thomas DiPersio, DEP, Waiver Unit

10 Commerce Way • Woburn, Massachusetts 01801 • FAX (617) 935-6393 • Telephone (617) 935-2160

INTERIM SITE CLASSIFICATION FORM

SCANNED

DISPOSAL SITE NAME Buckley and Mann, Inc.

SITE ID NUMBER 3-0173

STREET 17 Lawrence Street

CITY/TOWN Norfolk STATE MA ZIP CODE 02056

Completed by:

Name: Robert Dangel Company: Camp Dresser & McKee Inc.

Street: 10 Cambridge Center City/Town: Cambridge

State: MA Zip Code: 02142

CLASSIFICATION SUMMARY

Compete following pages of form and summarize classification below:

Criterion	Met	Not Met	Insufficient Information
1	☐	X	☐
2	☐	X	☐
3	☐	X	☐
4	☐	X	☐
5	☐	X	☐
6	☐	X	☐
7	☐	X	☐
8	☐	X	☐
9	☐	X	☐

Recommended Site Classification:

☐ Priority ☒ Non-Priority ☐ Insufficient Information to Classify

Signature: [signature] Date: 4/23/92

R. Dangel, Camp Dresser & McKee Inc

April 22, 1992

Publication # 15702-8-500-10-88-C.R.

FOR DEQE USE

	DEQE Concurrence Yes	DEQE Concurrence No	Comment
1	☑	☐	
2	☑	☐	
3	☑	☐	
4	☑	☐	
5	☑	☐	
6	☑	☐	
7	☑	☐	
8	☑	☐	
9	☑	☐	

Department's Determination on Site Classification

☐ Priority ☑ Non-Priority ☐ Insufficient Information to Classify

Approved by: [signature]

Title: Acting Section Chief

Date: 10/2/92

INTERIM SITE CLASSIFICATION

Note: Check appropriate box for each criterion indicating whether a criterion is met or not met or if information is inadequate to determine whether a criterion is met. Only one of these three boxes should be checked for each criterion. A disposal site cannot be classified as a non-priority disposal site if information is inadequate for any criterion.

Met	Not Met	
☐	☒	1. Criterion 1 is met if conditions at the disposal site provide the opportunity for direct contact with oil or hazardous materials via open lagoons, drum storage areas and sludges, or

If conditions at the disposal site provide the opportunity for direct contact with surface oil or hazardous materials and there is evidence of, or data that indicate, surface contamination at concentrations that could adversely affect human or environmental receptors.

Supporting Information and Source:
Field visits in 1990 and 1991 showed that wastewater sludges in Lagoons #1 and #2 had biodegraded. Soils still contain trace of dye carriers and metals, but not concentrations which would adversely affect human or environmental receptors.

☐ Additional information is required to determine if Criterion 1 is met.
Describe:

Met ☐ Not Met ☒

2. Criterion 2 is met if there is evidence of or data that indicate the presence of uncontained migrating oil or hazardous materials which exist as a separate phase in groundwater or surface water.

Supporting Information and Source:

Separate phase contaminants were not observed in groundwater or surface water
Reference: Report on an Environmental Site Assessment at Buckley and Mann, Inc., Norfolk, MA, dated July 1986.

☐ Additional information is required to determine if Criterion 2 is met.
Describe:

Met ☐ Not Met ☒

3. Criterion 3 is met if there are data that indicate groundwater contamination with oil or hazardous materials at levels exceeding state or federal drinking water standards/guidelines (or detectable levels of contaminants for which there are not state/federal standards or guidelines) and

the data is based on samples taken from a location that:

i. is within 2640 feet of a municipal water supply well(s), or

ii. is within a mapped cone of influence of a municipal water supply well(s), or

iii. is a private water supply well(s) or potentially affects a private water supply well,

unless there are data which indicate:

i. that a hydrogeologic connection does not exist between the groundwater containing oil or hazardous materials and the municipal water supply well, or

ii. that the identified concentrations of oil or hazardous materials, for which there are no drinking water standards or guidelines, are not and are not likely to be harmful to those drinking the water, or

iii. that the oil or hazardous materials have not migrated to and are not likely to migrate to public or private water supply well(s).

Supporting Information and Source: 1) Groundwater quality around wastewater lagoons did not exceed reportable concentrations for metals; 2) municipal water wells Franklin Well #4 and Well #5 are over a mile away, the site is not within the cone of influence; 3) on-site private wells are upgradient and are not impacted by site contamination.
Reference: Report on an Environmental Site Assessment at Buckley and Mann Inc., Norfolk, MA, dated July 1986.

☐ Additional information is required to determine if Criterion 3 is met.
Describe:

Met	Not Met
☐	☒

4. Criterion 4 is met if there is evidence of, or data that indicate that, a release of oil or hazardous materials at or from the disposal site into surface water has occurred and that the release is upstream of a potable surface water supply intake structure or of the recharge area of a municipal well(s),

   unless there are data that indicate:

   i. that a hydrogeologic connection between the release of oil or hazardous materials into surface water and the recharge area does not exist, or

   ii. that concentrations of oil or hazardous materials at the surface water supply intake or the municipal well have not and are not likely to exceed State or Federal drinking water standard/guidelines, or

   iii. that concentrations of oil or hazardous materials at the surface water supply intake or the municipal well(s), for which there are no drinking water standards or guidelines, are not and are not likely to be harmful to those drinking the water.

Supporting Information and Source:

Upstream and downstream sampling of surface water yielded similar, background metals concentrations and detected no volatile organic compounds.

Reference: Report on an Environmental Site Assessment at Buckley and Mann, Inc., July 1986.

☐ Additional information is required to determine if Criterion 4 is met.
Describe:

Met ☐ Not Met ☒

5. Criterion 5 is met if there is evidence of, or data that indicate that, a release of oil or hazardous materials at or from the disposal site to surface water has resulted or could result in a concentration which exceeds Ambient Water Quality Criteria for the protection of aquatic life or human health.

Supporting Information and Source:

The Mill River passes through the site. The surface water quality measured downsteam of the site did not exceed Ambient Water Quality Criteria for the hazardous material constituents on the site.

Reference: Report on an Environmental Site Assessment at Buckley and Mann, Inc., July, 1986.

☐ Additional information is required to determine if Criterion 5 is met.
Describe:

Met ☐ Not Met ☒

6. Criterion 6 is met if there is evidence of, or data that indicate that, the disposal site poses a threat of fire or explosion.

Supporting Information and Source:

There is no free product at the site. TPH and Base Neutral Compounds in the soil do not pose a threat of fire or explosion.

Reference: Status Report and Revised Lagoon Closure Plan, October 1990.
Report on an Environmental Site Assessment at Buckley and Mann, Inc., July, 1986.

☐ Additional information is required to determine if Criterion 6 is met.
Describe:

Met	Not Met	
☐	☒	7. Criterion 7 is met if there is evidence, or data that indicate that there are or there could be air emissions at or from the disposal site which could adversely impact human or environmental receptors.

Supporting Information and Source:

There are no air emissions at the site.

☐ Additional information is required to determine if Criterion 7 is met. Describe:

Met	Not Met	
☐	☒	8. Criterion 8 is met if there is evidence of, or data that indicate that, releases of oil or hazardous materials at or from the disposal site have affected or could affect the human food chain.

Supporting Information and Source:

Agricultural land and fish reserves are not impacted by the site.

☐ Additional information is required to determine if Criterion 8 is met. Describe:

Met	Not Met
☐	☒

9. Criterion 9 is met if there are data or any other information that indicate that the disposal site may pose a significant or otherwise unacceptable risk of harm to health, safety, public welfare, or to the environment if left in its present state for several years. Note: This criterion is to be used only if none of the previous eight criteria were met, and no additional information is required.

Supporting Information and Source:

It is unlikely that contaminants from the Buckley and Mann site would pose a significant or unacceptable risk to health public welfare or the environment, if the site was left in its present state for several years. Much of the contaminated lagoon soil has been excavated and sampling of the stockpiled sludge in 1990 showed that natural degradation of organic contaminants was in progress.

Reference: (1) Report on an Environmental Site Assessment at Buckley and Mann, Inc., Norfolk, MA. July 1986.

(2) Status Report and Revised Lagoon Closure Plan for Buckley and Mann, Inc., October 1990.

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

WAIVER APPLICATION FORM

Publication # 15701-20-500-10-88-C.R.
Approved by: Ric Murphy State Purchasing Agent

INSTRUCTIONS FOR COMPLETING WAIVER APPLICATION FORM

Application Submission

The Waiver Application Form should be completed according to the following directions and submitted to:

DEQE-MCP Waiver Program
One Winter Street
5th Floor
Boston, Massachusetts 02108

Please see the Waiver Fact Sheet for information on the Department's processing of waiver applications.

The waiver review payment can be made by personal check and must be sent with the Waiver Application Payment Form to:

Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Shawmut Bank
P.O. Box 4062
Boston, Massachusetts 02211

SECTION I: Applicant Information

This section requires identification of the applicant and a person whom the Department can contact with questions about the application.

SECTION II: Location/Disposal Site Status

This section requires information on the status of the location or disposal site for which application for waiver is being made including information about notification, listing, classification, and enforcement.

SECTION III: Waiver Considerations

This section requires narrative answers to questions related to the disposal site and the remedial response action which the Department will consider in evaluating a waiver application. DO NOT include additional attachments as supplements to your answers. Refer to appropriate sections of the Preliminary Assessment Form, the Phase I Report, or the Site Classification Form in your answers. This section must be completed and signed by a person who is competent and expert in the field of oil and hazardous materials remedial response actions.

SECTION IV: Waiver Conditions

This section identifies the conditions which are imposed every application.

SECTION V: Permits and Approvals

This section contains a checklist of permits and approva that may be required in the conduct of proposed remedial response actions described in Section III. Check the on which are likely to be applicable to the proposed remedi response action.

SECTION VI: Certification

This certification must be signed and dated by the applicant. The application will not be considered complete without this signature.

SECTION VII: Access Agreement

If the applicant is not the owner of the disposal site o location, the applicant must obtain permission from the owner(s) for access to the property to conduct remedial response actions. The owner, whether or not the applica must sign this agreement. The application will not be considered complete without this signature. If there is more than one owner, place additional information on the back of the agreement.

SECTION VIII: Waiver Application Disposition

This section will be completed by the Department of Environmental Quality Engineering when the application h been approved or denied. An approval may contain condit in addition to those set forth in Section IV. For all approved waiver applications, this section will be retur to the applicant for countersignature. The signed form be returned to DEQE.

REMEDIAL RESPONSE ACTION COMPLETION STATEMENT

This statement must be submitted to the Department of Environmental Quality Engineering by the applicant upon completion of the remedial response action which shall o no later than five years from the date on which the application was approved by the Department. This form should be detached and reserved by the applicant until t remedial response action is complete. DO NOT SEND THIS IN WITH THE ORIGINAL APPLICATION.

WAIVER APPLICATION PAYMENT FORM

1. A waiver review payment of $1550 must be submitted at the same time as the waiver application. This payment covers the Department's costs of reviewing the waiver application and ensuring compliance with waiver conditions. Note: the check is sent to a different address than the application.

   All checks should be made out to the Commonwealth of Massachusetts and should indicate the site name on the check. The Waiver Application Payment Form must accompany the check.

2. Waiver applications will not be forwarded to the appropriate DEQE regional office for review until the application payment is received.

REFUNDS

1. A refund of the waiver review payment will be made only if:

   a. The application is incomplete and the applicant fails to submit the missing information within 30 days.

   b. Upon regional review, the site for which a waiver is being sought is classified as a priority disposal site pursuant to 310 CMR 40.544.

2. A refund of the waiver charge will not be made if:

   a. During regional review of the waiver application, DEQE is required to request the same information more than twice to complete its review. A notice informing the applicant of what is missing will be attached. In order for the Department to further consider an application for waiver for such a site, the applicant would have to resubmit a Waiver Application Form and a waiver review payment.

   b. The application for waiver is denied.

FOR DEQE USE ONLY:
Application Number 92-3-0173-1
Date Received 6/2/92
Site Name Buckley & Mann
Site ID No. 3-0173
Regional Office NERO
Date Review to be Complete

SECTION I: APPLICANT INFORMATION

1. Name of Applicant: Mr. Richard Mann Title: President

2. Company or Organization: Buckley and Mann, Inc.

   Address: 17 Lawrence Street

   City/Town: Norfolk, State: MA Zip: 02056

   Telephone Number: (508) 528-0695
   (AREA CODE) (NUMBER)

3. Relation of Applicant to Location or Disposal Site:

   [X] Potentially Responsible Party

   [ ] Other person choosing to conduct the remedial response action

4. Contact Person(if different from applicant):

   Name: Mr. Robert Dangel Title: Principal Scientist

   Company or Organization: Camp Dresser & McKee Inc.

   Address: Ten Cambridge Center

   City/Town: Cambridge State: MA Zip: 02142

   Telephone Number: (617) 252-8000
   (AREA CODE) (NUMBER)

SECTION II: LOCATION/DISPOSAL SITE STATUS

1. Name of Location/Disposal Site: Buckley and Mann, Inc.

2. Address of Location/Disposal Site: 17 Lawrence Street
(STREET)

Norfolk, MA 02056
(CITY/TOWN) (ZIP CODE)

3. Has the Department been notified of a release or threat of a release of oil or hazardous material at or from this location?

[X] Yes [ ] No If yes, when 1986

4. Has a Notice of Responsibility for the disposal site been received?

[ ] Yes [X] No If yes, when Notification predates inception of MCP

5. Has the location been listed on the Massachusetts Location To Be Investigated List?

[ ] Yes [X] No

If yes, site ID# _____

6. Has the location been listed on the Massachusetts Confirmed Disposal Sites List?

[ ] Yes [X] No

If yes, site ID# _____

7. How has the disposal site been classified by the Department, as indicated on the Confirmed Disposal Sites List?

[ ] Priority [ ] Non-Priority [X] Not Classifed

8. Is there an existing administrative consent order or unilateral order related to site investigation or remedial action at the location/disposal site?

[X] Yes [ ] No If yes, provide date(s) of order 7/25/86

9. Are there any applications for permits or approvals for the disposal site on which the Department has not yet acted?

[ ] Yes [X] No

If yes, which one(s) _____

10. Has a waiver application been submitted previously for this location/disposal site by the applicant, or, to the applicant's knowledge, by another applicant?

[ ] Yes [X] No

If yes, when _____ and by whom _____

11. Have the following documents been submitted to or prepared by the Department? If not, they must be submitted with this application. Check one box for each of the following documents. (If the disposal site has been classified by the Department, submittal of these documents is not required.)

	Included With This Application	Previously Submitted	Date Submitted
a. Preliminary Assessment Form	X Attachment 1	____	____
b. Phase I Report	X Attachment 2	____	____
c. Site Classification Form	X Attachment 3	____	____

SECTION III: WAIVER CONSIDERATIONS

1. Section III must be completed by a person who is competent and expert in the field of oil and hazardous materials remedial response actions. This section was completed by:

Name: Mr. Robert Dangel Signature: Robert A Dangel

Title: Principal Scientist Date: March 31, 1992

Company or Organization: Camp Dresser & McKee Inc.

Telephone Number: 617-252-8000

Address: Ten Cambridge Center

City/Town: Cambridge State: MA Zip Code: 02142

2. Identify and describe any changes in the nature or extent of the release of oil or hazardous materials or the conditions at the disposal site since the PA and Phase I report were submitted, or since the disposal site was classified.

No changes.

3. Describe any remedial response actions completed at the disposal site to date; identify any additional reports completed or submitted to the Department.

1) Soils were excavated from a trench leading to Lagoon #1 in 1986 and from Lagoon #1 in 1988. These soils are ongoing aerobic biological stabilization on site.

2) "Status Report and Revised Lagoon Closure Plan for Buckley and Mann, Inc., Norfolk, MA", October 1990.

4. Explain why the type, complexity, and extent of the release of oil or hazardous materials at this location/disposal site are such that the Department's continuing oversight of the remedial response action is not warranted. Non-priority disposal sites for which the likely remedial response actions are not complex or unique are most suitable for waiver.

Department oversight is not warranted because:

1) Operations that generated contaminant waste have ceased, prior to 1986.

2) The extent of soils contaminated with metals and Base/Neutral organic compounds has been delineated.

3) Soil contamination does not appear to be migrating off site.

4) The remedial response plan is to excavate the contaminated soils for aerobic degredation of the petroleum hydrocarbons, prior to evaluation for either on- or off-site disposal of soils contaminated with metals above background concentrations.

5) There are no public water supply wells within at least a mile of the site.

6) The Mill River, which flows through the site, does not appear to be receiving contamination from the site.

7) Groundwater on the site does not appear to have elevated levels of VOCs or metals.

5. To the extent that the remedial response action alternative likely to be taken at the disposal site is known, please provide the following information:

a. Based on the information available, indicate the action planned for the disposal site by checking one of the boxes below:

☐ No Further Action ☒ Further Investigation and Remediation

Note: If no further action is planned for the disposal site, do not submit an application.

b. Briefly describe the remedial action alternative likely to be implemented at the disposal site, and whether it is likely to be a permanent solution pursuant to 310 CMR 40.020 and 40.545 (3)(j).

The remedial response plan is to excavate the contaminated soils for aerobic degradation of the petroleum hydrocarbons prior to evaluation for either on- or off-site disposal of soils containing metals above background concentrations.

c. Briefly describe the uses or activities planned for the disposal site, (e.g. residential development, industrial development, playgrounds, parks, commercial development).

Continued industrial operations by Buckley and Mann Inc.

d. What permits and approvals are likely to be required for the proposed remedial response alternative? Complete Section V to answer this question.

e. Describe any exposures to oil and hazardous materials that may occur during implementation of the proposed remedial response alternative or during future site development. Describe any measure that would be implemented to mitigate the effects of such exposure.

Dermal contact with contaminated soil will be limited by proper Health and Safety procedures..

f. What is the approximate cost and the expected financing arrangement for each of the following elements of the likely remedial response action?

Investigation and Assessment (Phases II and III):

To be funded by owner. Cost not yet determined.

Design (Phase IV):

Construction and Operation (Phases IV and V):

To be funded by owner. Cost not yet determined.

g. When do you expect to complete the remedial response action?

1997

h. Considering your response to 2.a. through 2.g. state why the Department's oversight of this remedial response is not warranted.

1) Contaminated soil is confined to a specific location on the site.

2) No off-site impact to sensitive receptors anticipated.

3) Proposed remediation is a simple, straightforward procedure.

6. Identify the persons or companies (giving addresses and telephone numbers) who will conduct the remedial response actions. Identify the key personnel likely to participate and briefly describe their qualifications and experience in conducting remedial response actions. Please include their experience with remedial response actions of a type similar to that identified in this application. Include contractors for the following activities:

Investigation and Assessment:

Mr. Robert Dangel
617-252-8000
Camp Dresser & McKee Inc.
Ten Cambridge Center
Cambridge, MA 02142

Experience: 12 years' experience in hazardous waste abatement

Design (if known):

Construction and Operation (if known):

7. Provide any other justification to support the approval of this waiver application.

The waiver will enable us to proceed as rapidly as practical with an economical and effective plan (CDM 10/90 Revised Closure Plan). If granted, the waiver will speed the process and minimize the costs with no negative impact. We believe that the waiver is in the best interest of DEP, Buckley & Mann, Inc. and our Norfolk neighbors.

SECTION IV: WAIVER CONDITIONS

1. Responsibility of the Applicant

In submitting this application, the applicant agrees, pursuant to 310 CMR 40.537, to ensure that:

a. The remedial response action is completed in accordance with all applicable requirements of M.G.L. c. 21E and the Massachusetts Contingency Plan;

b. The Department is notified immediately, and all activities at the disposal site cease, if the applicant becomes aware of any information which may alter the non-priority classification of the disposal site or that indicates that an imminent hazard exists;

c. The Department is notified in a timely manner if the applicant becomes aware that any of the responses provided in Section III of the application are no longer substantially accurate;

d. All documents required pursuant to 310 CMR 40.535 are submitted to the Department promptly upon completion of each document;

e. The remedial response action is performed and supervised by persons who are competent and expert in the field of oil and hazardous material remedial response actions;

f. All necessary federal, state, or local permits, licenses or approvals, and any necessary agreements for the conduct of the remedial response action are obtained;

g. If a Public Involvement Plan has been or is hereafter prepared for the site, all activities assigned to the potentially responsible party in the plan are performed;

h. Notice to the public is provided in accordance with 310 CMR 40.202 (4) and that such notice is simultaneously sent to the Department.

i. Notices are prepared and distributed in accordance with 310 CMR 40.545(6)(a), 40.546(7)(a), and 40.547(4)(a) promptly upon the completion of each remedial response phase and that such notices are simultaneously sent to the Department;

j. A signed Completion Statement is submitted to the Department when the remedial response action is completed, which shall occur no later than five years from the date on which the Department approved the application. This statement certifies that the remedial response action has been completed in accordance with the approved waiver application, M.G.L. c.21E, and the Massachusetts Contingency Plan. This statement must include an opinion as to whether the remedial response constitutes a permanent solution and must be signed by the applicant and the applicant's consultant.

2. Applicant Information

In submitting this application to the Department, the applicant understands that:

a. The determination on a waiver application is in the sole discretion of the Department;

b. The approval of this waiver application does not constitute an approval by the Department of any remedial response proposed to be implemented, if one is identified in the application;

c. The approval of this waiver application may be withdrawn or amended by the Department at any time if the applicant fails to comply with the waiver conditions or if warranted by information which becomes available or circumstances which arise after this application is approved;

d. The Department will not approve reports, documents or other submissions for a remedial response action under an approved waiver. The Department will acknowledge receipt of, but not approve or concur with, completion statements submitted by the applicant;

e. The completion of a remedial response action under an approved waiver does not prevent the Department from taking or requiring any other response actions at the disposal site; and

f. Failure to adhere to the conditions of an approved application is a violation of M.G.L. c.21E and 310 CMR 40.000.

SECTION V: PERMITS AND APPROVALS

Check any of the following items that may be required for the conduct of remedial response action, including both assessment and remediation:

- [X] Wetlands Order of Conditions, pursuant to 310 CMR 10.00
- [ ] Certification for Dredging, Dredged Material Disposal and Filling in Waters, pursuant to 314 CMR 9.00
- [ ] Groundwater Discharge Permit, pursuant to 314 CMR 5.00
- [ ] Surface Water Discharge Permit, pursuant to 314 CMR 3.00
- [ ] New Source Approval (air), pursuant to 310 CMR 7.00
- [ ] Permits and approvals likely to be required are unknown at this time.
- [ ] Any other permit or approval. Please identify below:

SECTION VI

CERTIFICATION

A. SITE INFORMATION:

Name of Location/Disposal Site: Buckley and Mann, Inc.

DEQE Site ID Number:(if any) _____

Address: 17 Lawrence Street
(STREET)

Norfolk, MA — 02056
(CITY/TOWN) (ZIP CODE)

B. APPLICANT INFORMATION:

Name of Waiver Applicant: Mr. Richard Mann, President
(NAME/TITLE)

Company or Organization: Buckley and Mann, Inc.

Address: 17 Lawrence Street
(STREET)

Norfolk, MA 02056
(CITY/TOWN) (STATE) (ZIP CODE)

C. CERTIFICATION

I certify that I have personally examined this waiver application, including any attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment. I also certify that I have read Section IV of this application and I understand and agree to all conditions presented therein.

_____ 4/28/92
(Signature of Applicant) (Date)

SECTION VIII

WAIVER APPLICATION DISPOSITION

(For DEQE Use Only)

1. Application Number:_____ Date Application Received: _____

2. Applicant Name:_____

   Address: _____
   (STREET)

   _____
   (CITY/TOWN) (STATE) (ZIP CODE)

3. Site Name:_____

4. Site ID Number:_____

5. Disposition

   Waiver Application Determination. (Check one)

   ☐ Approved.

   Conditions of approval:

   ☐ Denied.

   Basis for denial:

Application reviewed by:_____

Signature:_____ Date: _____

Acceptance of Waiver Application Disposition

I understand and agree to any and all additional conditions specified above for an approved application.

_____ _____
(Signature of Applicant) (Date)

To be completed by applicant for approved waiver applications. Sign and return this page to the Department for all approved waiver applications, regardless of whether any additional conditions have been specified.

SECTION VII

ACCESS AGREEMENT

A. Property Owner Information:

Name of Property Owner: Buckley and Mann, Inc.

Address of Owner: 17 Lawrence Street
(STREET)

Norfolk, MA 02056
(CITY/TOWN) (STATE) (ZIP CODE)

Telephone Number: 508-528-0695

Location of Property: 17 Lawrence Street
(STREET)

Norfolk, MA 02056
(CITY/TOWN) (STATE) (ZIP CODE)

Site ID Number: 3-0173

B. ACCESS AGREEMENT:

I agree to allow access to the property located at 17 Lawrence Street
(STREET)

Norfolk, MA 02056
(CITY/TOWN) (STATE) (ZIP CODE)

by Buckley and Mann, Inc. and his agents,
(APPLICANT)

the Department of Environmental Quality Engineering and its agents and employees for the purpose of conducting a remedial response action.

Buckley & Mann Inc. — Richard D. Dilla — 4/28/92

(NAME OF PROPERTY OWNER) (SIGNATURE OF PROPERTY OWNER) (DATE)

SECTION VIII
WAIVER APPLICATION DISPOSITION
(For DEP Use Only)

1. **Application Number:** 92-3-0173-1 **Date Application Received:** 6/2/92

2. **Applicant Name:** Mr. Richard Mann, Buckley and Mann, Inc.

   Applicant Address: 17 Lawrence Street

   Norfolk (City/Town) | MA (State) | 02056 (Zip)

3. **Site Name:** Buckley and Mann

4. **Site Address:** 17 Lawrence Street Norfolk (City/Town)

5. **Site ID Number:** 3-0173

6. **Disposition**

Waiver Application Determination. (Check One)

[X] **Approved.**

Conditions of Approval: 1) See addendum conditions on reverse side
2) See conditions as outlined in attached letter, dated October 5, 1992

[ ] **Denied.**

Basis for denial:

Application reviewed by: Stephen M. Johnson
Acting Chief, Site Management Branch

Signature: Stephen M. Johnson **Date:** 10/5/92

Acceptance of Waiver Application Disposition

I understand and agree to any and all additional conditions specified above for an approved application.

_____ _____
(Signature of Applicant) (Date)

Applicant: For approved waiver applications, sign and date both disposition forms. Return one completed copy to the Department within 60 days of the approval date, retain the second copy for your records. **NOTE:** The approval will become invalid if the disposition form, signed and dated by the applicant, is not received by the Department within 60 days of the approval date.

Send completed form to:

Department of Environmental Protection
Northeast Regional Office
10 Commerce Way
Woburn, MA 01801
Attn: Site Management/ Waiver Unit

REMEDIAL RESPONSE ACTION
COMPLETION STATEMENT

Do not send this form in with the application form. Detach this page and reserve it until the remedial response action is completed. At that time, submit this statement to the Department.

A. SITE INFORMATION:

Name of Disposal Site: _____

DEQE Site ID Number: _____

Address: _____
(STREET)

_____
(CITY/TOWN) (STATE) (ZIP CODE)

C. STATEMENT OF CONFORMANCE:

I certify that the remedial action for _____ has been
(SITE NAME)

completed in accordance with the approved waiver application dated _____,
(MONTH/DAY/YEAR)

M.G.L. c. 21E, and the Massachusetts Contingency Plan.

_____
(SIGNATURE OF APPLICANT/DATE)

D. STATEMENT OF COMPLETION:

Provide an opinion as to whether the remedial response action constitutes a permanent solution under M.G.L. c.21E and provide a basis for that opinion. This opinion must be signed by the applicant and the applicant's consultant.

_____ _____
(SIGNATURE OF APPLICANT/DATE) **(PHONE NUMBER)**

_____ _____
(NAME OF CONSULTANT FIRM) **(SIGNATURE OF APPLICANT'S REMEDIAL RESPONSE ACTION CONSULTANT/ DATE)**
Please Print

3-0173
Norfolk

CDM
environmental engineers, scientists,
planners, & management consultants

CAMP DRESSER & McKEE INC.
Ten Cambridge Center
Cambridge, Massachusetts 02142
617 252-8000

August 19, 1992

Mr. Thomas DiPersio
Department of Environmental Protection
Massachusetts Contingency Plan- Waiver Program
10 Commerce Way
Woburn, MA 01801

Re: Buckley & Mann, Inc., Norfolk, MA

Dear Mr. DiPersio:

Per your request during today's site tour at Buckley & Mann, Inc. (B&M), Camp Dresser & McKee Inc. (CDM) is pleased to submit a copy of its June, 18 1992 letter to B&M. The letter includes the laboratory results from four soil samples collected in areas containing residues from the former Carbonizer process. The samples were collected as part of an initial assessment of the options for off-site disposal of the residues.

If you have any further questions, please contact Richard Mann at B&M or me at CDM.

Very truly yours,

CAMP DRESSER & McKEE INC.

Robert A. Dangel
Principal Scientist

Attached: CD June 18, 1992 letter to B&M,
with laboratory report.

CDM
environmental engineers, scientists,
planners, & management consultants

CAMP DRESSER & McKEE INC.
Ten Cambridge Center
Cambridge, Massachusetts 02142
617 252-8000

June 18, 1992

Mr. Richard Mann
Buckley & Mann, Inc.
P.O. Box 409
Franklin, MA 02038

Dear Mr. Mann:

Camp Dresser & McKee Inc. (CDM) is pleased to present the enclosed laboratory report for the four soil/residue samples from the Carbonizer process. These samples were received at CDM on May 28, 1992. A data summary table is attached.

The samples were not hazardous waste, based on the results of the Toxic Characteristic Leaching Procedure (TCLP) for metals. Constituent analyses showed chromium and lead significantly above anticipated background concentrations. Arsenic, barium, cadmium and mercury were slightly above anticpated background concentrations

Three of the four samples contained petroleum hydrocarbons in excess of 300 mg/kg dry weight, the action level proposed by the Massachusetts Department of Environmental Protection (DEP). The DEP prohibits disposal of soils contaminated with non-virgin petroleum hydrocarbons in Massachusetts landfills. The nearest out of state landfill would be the former Consolidated Waste Services, Inc. landfill, which is now part of Chemical Waste Management, in southern Maine. The cost of disposal at this landfill would be approximately $55 per ton, plus $550 per load for transportation. A budget figure of $90 per ton should cover these costs and ancillary fees.

If you have any questions, please contact me.

Very truly yours,

CAMP DRESSER & McKEE INC.

Robert A. Dangel
Principal Scientist

CAMP DRESSER & McKEE

CLIENT [redacted] Berkley + Mann — JOB [redacted] — COMPUTED BY RW

PROJECT Remediation — DATE CHECKED — DATE 6/18/92

DETAIL Soil Samples — CHECKED BY — PAGE NO.

Parameter	Detection Limit (Lab)	Regulatory Limit (Max)	#1 Carbonizer Washtub Discharge	#2 Carbonizer Lagoon	#3 Carbonizer Trench	#4 Carbonizer Fire Pit
RCRA metals (mg/Kg dry wt)						
Ag	2.0		ND	ND	ND	11
As	0.50		3.3	1.7	12	6.5
Ba	10		130	46	140	290
Cd	1.0		5.2	4.4	18	15
Cr	2.0		68	73	ND	550
Hg	0.30		0.63	0.86	0.46	0.49
Pb	5.0		280	130	74	660
Se	1.0		ND	ND	ND	ND
Petroleum Hydrocarbons (mg/Kg dry wt)						
TPH	25		220	860	1300	650
TCLP (mg/l in extract)						
Ag	0.50	5.0	ND	ND	ND	ND
As	2.0	5.0	ND	ND	ND	ND
Ba	1.0	100	0.91	ND	ND	1.6
Cd	0.20	1.0	ND	ND	ND	ND
Cr	0.50	5.0	ND	ND	ND	ND
Hg	0.002	0.20	ND	ND	ND	ND
Pb	0.50	5.0	1.4	ND	ND	2.3
Se	0.50	1.0	ND	ND	ND	ND
PCBs (mg/Kg dry)						
Aroclor 1221	0.048		ND	ND	ND	ND
1232	"		ND	ND	ND	ND
1242/1016	"		ND	ND	ND	ND
1248	"		ND	ND	ND	ND
1254	"		0.071	0.29	ND	0.23
1260	"		0.13	0.39	ND	0.51
Solids, dry wt %			88.1	74.7	17.3	83

Buckley & Mann
INCORPORATED
ESTABLISHED 1901

12 May 1992

Mr. Robert Dangle
Camp Dresser & McKee Inc.
10 Cambridge Center
Cambridge, MA 02142

Dear Bob:

We have sent you four samples for analysis. These represent areas which Steve and I determined would cover the possible variations in the carbonizer areas. The samples are as follows:

Sample #1 - Carbonizer washtub discharge containing buttons, buckles, zippers and fibers not fully carbonized.
We took two surface samples and two at 18" depth. All buttons except 1 or 2 were from surface sample.
Estimated area - 20' x 40'.

Sample #2 - Carbonizer lagoon sample.
Two samples taken from the edge of the carbonizer lagoon. There is growth in the lagoon.

Sample #3 - Trench leading from carbonizer washtub discharge to the carbonizer lagoon.
Sampled surface of trench which has 1" to 2" of flowing water leeching in from Mill Pond. The surface has a reddish (ferrous) color in a thin layer. Under the aqueous layer is a thick layer of decayed (black) leaf, then sand.
Trench about 8' x 300'

Sample #4 - Disposal Area near the carbonizer.
Took five samples at a depth of 18". Contains old brick, glass and other rubbish. This area was burned periodically.
Area closed approximately 1965.
The disposal area covered a circle of 30' to 40' in diameter.

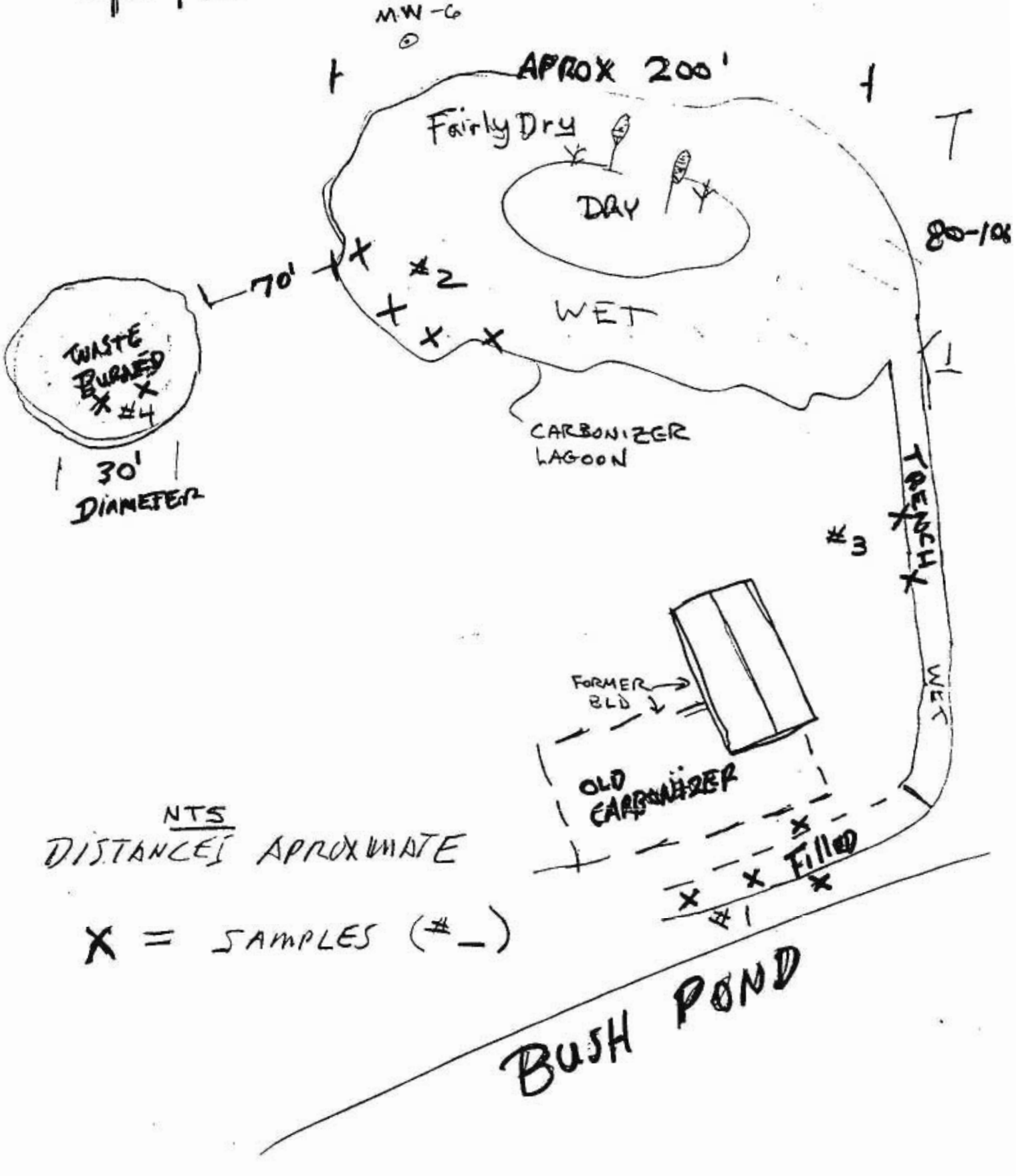
Please give us a call when you determine the test procedure recommended.

Very truly yours,

Richard D. Mann
RDM/lvp

Factory: 17 Lawrence Street, Norfolk, Massachusetts 02056 | Mail: Box 409, Franklin, Massachusetts 02038
Telephone: (508) 528-0695 Telex: 4931680 | Fax: (508) 528-1361

5/30/92



NTS

DISTANCES APPROXIMATE

X = SAMPLES (#_)

METHOD REFERENCES

Listed below are the references for analytical methods used by the Camp Dresser & McKee Laboratory.

Method Nos. 100-499	Method for Chemical Analysis of Water and Wastes EPA-600/4-79-020 Revised March 1983
Method Nos. 500-599	Methods for the Determination of Organic Compounds in Drinking Water EPA/600/4-88/039 December 1988
Method Nos. 600-699	Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater EPA-600/4-82-057 July 1982
Method Nos. 1000-9999	Test Methods for Evaluating Solid Waste EPA SW-846 Third Edition November 1986
Methods with SM prefix	Standard Methods for the Examination of of Water and Wastewater APHA/AWWA/WPCF 16th Edition 1985
ASTM	Annual Book of ASTM Standards

CDM ANALYTICAL SERVICES LABORATORY
PCB - DRY ANALYTICAL REPORT

METHOD: EPA 8080

Client: BUCKLEY & MANN
Task #: 920528-08
Batch #: S920601PCB S920605

Client ID: #1
Lab ID: 92-01608
S920605TPH S920605MET

Matrix: Soil
Units: mg/kg dry

Prepared: 06/01/92
Analyzed: 06/04/92

	REPORTING LIMIT	RESULT *
Aroclor 1221	0.048	N.D.
Aroclor 1232	0.048	N.D.
Aroclor 1242/1016	0.048	N.D.
Aroclor 1248	0.048	N.D.
Aroclor 1254	0.048	0.071
Aroclor 1260	0.048	0.13

(*) - This sample contains a halogenated organic substance similar to PCB but it is not any of the target aroclors. The sample chromatogram suggests that the unknown substance could possibly be aroclor 1268.

N.D. - Not Detected at specified detection limit.

Approved By: DTC Date: 6/16/92

CDM ANALYTICAL SERVICES LABORATORY
PCB - DRY ANALYTICAL REPORT

METHOD: EPA 8080

Client: BUCKLEY & MANN
Task #: 920528-08
Batch #: S920601PCB S920605

Client ID: #2
Lab ID: 92-01609
S920605MET

Matrix: Soil
Units: mg/kg dry

Prepared: 06/01/92
Analyzed: 06/03/92

	REPORTING LIMIT	RESULT *
Aroclor 1221	0.054	N.D.
Aroclor 1232	0.054	N.D.
Aroclor 1242/1016	0.054	N.D.
Aroclor 1248	0.054	N.D.
Aroclor 1254	0.054	0.29
Aroclor 1260	0.054	0.39

(*) - This sample contains a halogenated organic substance similar to PCB but it is not any of the target aroclors. The sample chromatogram suggests that the unknown substance could possibly be aroclor 1268.

N.D. - Not Detected at specified detection limit.

Approved By: _____ Date: 6/16/92

CDM ANALYTICAL SERVICES LABORATORY
PCB - DRY ANALYTICAL REPORT

METHOD: EPA 8080

Client: BUCKLEY & MANN
Task #: 920528-08
Batch #: S920601PCB S920605

Client ID: #3
Lab ID: 92-01610
S920605MET

Matrix: Soil
Units: mg/kg dry

Prepared: 06/01/92
Analyzed: 06/03/92

	REPORTING LIMIT	RESULT*
Aroclor 1221	0.24	N.D.
Aroclor 1232	0.24	N.D.
Aroclor 1242/1016	0.24	N.D.
Aroclor 1248	0.24	N.D.
Aroclor 1254	0.24	N.D.
Aroclor 1260	0.24	N.D.

(*) - This sample contains a halogenated organic substance similar to PCB but it is not any of the target aroclors. The sample chromatogram suggests that the unknown substance could possibly be aroclor 1268.

N.D. - Not Detected at specified detection limit.

Approved By: L. L. Date: 6/16/92

CDM ANALYTICAL SERVICES LABORATORY
PCB - DRY ANALYTICAL REPORT

METHOD: EPA 8080

Client: BUCKLEY & MANN
Task #: 920528-08
Batch #: S920601PCB S920605

Client ID: #4
Lab ID: 92-01611
S920605MET

Matrix: Soil
Units: mg/kg dry

Prepared: 06/01/92
Analyzed: 06/03/92

	REPORTING LIMIT	RESULT*
Aroclor 1221	0.043	N.D.
Aroclor 1232	0.043	N.D.
Aroclor 1242/1016	0.043	N.D.
Aroclor 1248	0.043	N.D.
Aroclor 1254	0.043	0.23
Aroclor 1260	0.043	0.51

(*) - This sample contains a halogenated organic substance similar to PCB but it is not any of the target aroclors. The sample chromatogram suggests that the unknown substance could possibly be aroclor 1268.

N.D. - Not Detected at specified detection limit.

Approved By: _____ Date: 6/16/92

CDM ANALYTICAL SERVICES LABORATORY
RCRAM_D_TG ANALYTICAL REPORT

METHOD: EPA 6010/7000 SERIES

Client: BUCKLEY & MANN
Task #: 920528-08
Batch #: S920601PCB S920605 S920605TPH S920605MET

Matrix: Soil
Units: mg/kg dry

	METHOD REPORTING LIMIT	CLIENT ID #1 CDM ID 92-01608	CLIENT ID #2 CDM ID 92-01609
Silver	2.0	N.D.	N.D.
Arsenic	0.50	3.3	1.7
Barium	10	130	46
Cadmium	1.0	5.2	4.4
Chromium	2.0	68	73
Mercury	0.30	0.63	0.86
Lead	5.0	280	130
Selenium	1.0	N.D.	N.D.

N.D. - Not Detected at specified detection limit.

Approved By: _____ Date: 6/15/92

CDM ANALYTICAL SERVICES LABORATORY
RCRAM_D_TG ANALYTICAL REPORT

METHOD: EPA 6010/7000 SERIES

Client: BUCKLEY & MANN
Task #: 920528-08
Batch #: S920601PCB

Matrix: Soil
Units: mg/kg dry

	METHOD REPORTING LIMIT	CLIENT ID #3 CDM ID 92-01610	CLIENT ID #4 CDM ID 92-01611
Silver	2.0	N.D.	11
Arsenic	0.50	12	6.5
Barium	10	140	290
Cadmium	1.0	18	15
Chromium	2.0	N.D.	550
Mercury	0.30	0.46	0.49
Lead	5.0	74	660
Selenium	1.0	N.D.	N.D.

N.D. - Not Detected at specified detection limit.

Approved By: _____ Date: 6/15/92

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CDM ANALYTICAL SERVICES LABORATORY
TPH - DRY ANALYTICAL REPORT

METHOD: EPA 9071/418.1

Client: BUCKLEY & MANN
Task #: 920528-08
Batch #: S920601PCB

Matrix: Soil
Units: mg/kg dry

Prepared: 06/04/92
Analyzed: 06/08/92

	METHOD REPORTING LIMIT	CLIENT ID #1 CDM ID 92-01608	CLIENT ID #2 CDM ID 92-01609
Pet Hydrocarbon, IR	25	220	860

N.D. - Not Detected at specified detection limit.

Approved By: EE Date: 6/15/92

CDM ANALYTICAL SERVICES LABORATORY
TPH - DRY ANALYTICAL REPORT

METHOD: EPA 9071/418.1

Client: BUCKLEY & MANN
Task #: 920528-08
Batch #: S920601PCB

Matrix: Soil
Units: mg/kg dry

Prepared: 06/04/92
Analyzed: 06/08/92

	METHOD REPORTING LIMIT	CLIENT ID #3 CDM ID 92-01610	CLIENT ID #4 CDM ID 92-01611
Pet Hydrocarbon, IR	25	1300	650

N.D. - Not Detected at specified detection limit.

Approved By: _____ Date: 6/15/92

CDM ANALYTICAL LABORATORY

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
EPA SW846 Method 1311 as revised in Federal Register June 29, 1990

Project:	BUCKLEY & MANN	Client ID:	#1
Task:	92052808	CDM ID:	92-01608
		Batch:	L920609MET
Matrix: TCLP Extract		Prepared:	06/09/1992
Units: mg/l		Analyzed:	06/09/1992

ANALYTE	REPORTING LIMIT	MCC	ANALYTICAL RESULT	CORRECTION FACTOR (*)	CORRECTED RESULT
Arsenic	2.0	5.0	ND	1.25	ND
Barium	1.0	100	1.1	1.18	0.91
Cadmium	0.20	1.0	ND	1.18	ND
Chromium	0.50	5.0	ND	1.18	ND
Lead	0.50	5.0	1.5	1.10	1.4
Mercury	0.002	0.20	ND	1.08	ND
Selenium	0.50	1.0	ND	1.28	ND
Silver	0.50	5.0	ND	0.67	ND

MCC = Maximum concentration of contaminants.

ND = Not detected at specified detection limit.

(*) – Correction factor based on recovery of analyte added to sample batch type.

Approved by: _____ Date: 6/9/92

CDM ANALYTICAL LABORATORY

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
EPA SW846 Method 1311 as revised in Federal Register June 29, 1990

Project:	BUCKLEY & MANN	Client ID:	#2
Task:	92052808	CDM ID:	92-01609
		Batch:	L920609MET
Matrix: TCLP Extract		Prepared:	06/09/1992
Units: mg/l		Analyzed:	06/09/1992

ANALYTE	REPORTING LIMIT	MCC	ANALYTICAL RESULT	CORRECTION FACTOR (*)	CORRECTED RESULT
Arsenic	2.0	5.0	ND	1.25	ND
Barium	1.0	100	ND	1.18	ND
Cadmium	0.20	1.0	ND	1.18	ND
Chromium	0.50	5.0	ND	1.18	ND
Lead	0.50	5.0	ND	1.10	ND
Mercury	0.002	0.20	ND	1.08	ND
Selenium	0.50	1.0	ND	1.28	ND
Silver	0.50	5.0	ND	0.67	ND

MCC = Maximum concentration of contaminants.

ND = Not detected at specified detection limit.

(*) – Correction factor based on recovery of analyte added to sample batch type.

Approved by: _____ Date: _____

CDM ANALYTICAL LABORATORY

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
EPA SW846 Method 1311 as revised in Federal Register June 29, 1990

Project:	BUCKLEY & MANN	Client ID:	#3
Task:	92052808	CDM ID:	92-01610
		Batch:	L920609MET
Matrix: TCLP Extract		Prepared:	06/09/1992
Units: mg/l		Analyzed:	06/09/1992

ANALYTE	REPORTING LIMIT	MCC	ANALYTICAL RESULT	CORRECTION FACTOR (*)	CORRECTED RESULT
Arsenic	2.0	5.0	ND	1.25	ND
Barium	1.0	100	ND	1.18	ND
Cadmium	0.20	1.0	ND	1.18	ND
Chromium	0.50	5.0	ND	1.18	ND
Lead	0.50	5.0	ND	1.10	ND
Mercury	0.002	0.20	ND	1.08	ND
Selenium	0.50	1.0	ND	1.28	ND
Silver	0.50	5.0	ND	0.67	ND

MCC = Maximum concentration of contaminants.

ND = Not detected at specified detection limit.

(*) – Correction factor based on recovery of analyte added to sample batch type.

Approved by: _____ Date: _____

CDM ANALYTICAL LABORATORY

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
EPA SW846 Method 1311 as revised in Federal Register June 29, 1990

Project:	BUCKLEY & MANN	Client ID:	#4
Task:	92052808	CDM ID:	92-01611
		Batch:	L920609MET
Matrix: TCLP Extract		Prepared:	06/09/1992
Units: mg/l		Analyzed:	06/09/1992

ANALYTE	REPORTING LIMIT	MCC	ANALYTICAL RESULT	CORRECTION FACTOR (*)	CORRECTED RESULT
Arsenic	2.0	5.0	ND	1.25	ND
Barium	1.0	100	1.9	1.18	1.6
Cadmium	0.20	1.0	ND	1.18	ND
Chromium	0.50	5.0	ND	1.18	ND
Lead	0.50	5.0	2.5	1.10	2.3
Mercury	0.002	0.20	ND	1.08	ND
Selenium	0.50	1.0	ND	1.28	ND
Silver	0.50	5.0	ND	0.67	ND

MCC = Maximum concentration of contaminants.

ND = Not detected at specified detection limit.

(*) – Correction factor based on recovery of analyte added to sample batch type.

Approved by: _____ Date: _____

CDM ANALYTICAL LABORATORY

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
EPA SW846 Method 1311 as revised in Federal Register June 29, 1990

Project:	BUCKLEY & MANN	Client ID:	TCLP BLANK
Task:	92052808	CDM ID:	L920609METB1
		Batch:	L920609MET
Matrix: TCLP Extract		Prepared:	06/09/1992
Units: mg/l		Analyzed:	06/09/1992

ANALYTE	REPORTING LIMIT	MCC	ANALYTICAL RESULT	CORRECTION FACTOR (*)	CORRECTED RESULT
Arsenic	2.0	5.0	ND	1.25	ND
Barium	1.0	100	ND	1.18	ND
Cadmium	0.20	1.0	ND	1.18	ND
Chromium	0.50	5.0	ND	1.18	ND
Lead	0.50	5.0	ND	1.10	ND
Mercury	0.002	0.20	ND	1.08	ND
Selenium	0.50	1.0	ND	1.28	ND
Silver	0.50	5.0	ND	0.67	ND

MCC = Maximum concentration of contaminants.

ND = Not detected at specified detection limit.

(*) – *Correction factor based on recovery of analyte added to* sample batch type.

Approved by: _____ Date: _____

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 8080
PCB 8080 QC - BLANK

Batch #: S920601PCB
Lab ID: S920601PCBB1
Matrix: Soil
Units: mg/kg dry

Prepared: 06/01/1992
Analyzed: 06/03/1992

	QC LIMIT	CDM METHOD BLANK S920601PCBB1
AROCLOR 1016/1242	0.050	N.D.
AROCLOR 1221	0.050	N.D.
AROCLOR 1232	0.050	N.D.
AROCLOR 1248	0.050	N.D.
AROCLOR 1254	0.050	N.D.
AROCLOR 1260	0.050	N.D.

N.D. - Not Detected at specified detection limit.

Approved By: L. L. Date: 6/16/92

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 8080

Batch #: S920601PCB
Matrix: Soil
Units: ug

Prepared: 06/01/1992

	SURROGATE ADDED	SURROGATE RESULT	% REC	QC LIMIT RECOVERY
92-01584-02				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.82	82	30-130
DECACHLOROBIPHENYL	1.0	1.2	120	60-160
92-01586-02				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.88	88	30-130
DECACHLOROBIPHENYL	1.0	1.2	120	60-160
92-01586-DUP				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.84	84	30-130
DECACHLOROBIPHENYL	1.0	1.2	120	60-160
92-01587-02				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.72	72	30-130
DECACHLOROBIPHENYL	1.0	1.2	120	60-160
92-01589-02				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.84	84	30-130
DECACHLOROBIPHENYL	1.0	1.2	120	60-160
92-01608-01				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	1.0	100	30-130
DECACHLOROBIPHENYL	1.0	64	6400*	60-160
92-01609-01				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.93	93	30-130
DECACHLOROBIPHENYL	1.0	31	3100*	60-160
92-01610-01				

(*) - Elevated surrogate recovery due to matrix interference.

N.D. - Not Detected at specified detection limit.

Approved By: _____ Date: 6/16/92

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 8080

Batch #: S920601PCB
Matrix: Soil
Units: ug

Prepared: 06/01/1992

	SURROGATE ADDED	SURROGATE RESULT	% REC	QC LIMIT RECOVERY
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.51	51	30-130
DECACHLOROBIPHENYL	1.0	2.0	200*	60-160
92-01611-01				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.80	80	30-130
DECACHLOROBIPHENYL	1.0	3.1	310*	60-160
S920601PCBB1				
2,4,5,6-TETRACHLORO-m-XYLENE	1.0	0.65	65	30-130
DECACHLOROBIPHENYL	1.0	1.2	120	60-160

(*) - Elevated surrogate recovery due to matrix interference.

N.D. - Not Detected at specified detection limit.

Approved By: L. L. Date: 6/16/92

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 6010/7000
TRACE METALS QC - BLANK

Batch #: S920605
Lab ID: S920605METB1
Matrix: Soil
Units: mg/kg dry

Prepared: 06/05/1992
Analyzed: 06/08/1992

	QC LIMIT	CDM METHOD BLANK S920605METB1
barium	10.	N.D.
cadmium	1.0	N.D.
chromium	2.0	N.D.
copper	2.0	N.D.
lead	5.0	N.D.
nickel	2.0	N.D.
silver	2.0	N.D.

N.D. - Not Detected at specified detection limit.

Approved By: _____ Date: 6/15/92

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 6010/7000
TRACE METALS QC - DUPLICATE

Batch #: S920605
Lab ID: 92-01616METDU
Matrix: Soil
Units: mg/kg dry

Prepared: 06/05/1992
Analyzed: 06/08/1992

	QC LIMIT	SAMPLE RESULT	DUPLICATE RESULT	% RPD
beryllium	1.0	N.D.	N.D.	N/A
cadmium	1.0	1.3	1.1	21
chromium	2.0	30	30	0.28
copper	2.0	24	20	20
lead	5.0	48	23	70
nickel	2.0	22	17	27
silver	2.0	6.0	4.5	28
zinc	2.0	94	82	14

N.D. - Not Detected at specified detection limit.
N/A - Not Applicable

Approved By: _____ Date: 6/5/92

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 6010/7000
TRACE METALS QC - QCS

Batch #: S920605
Lab ID: S920605METQC
Matrix: Aqueous
Units: ug/l

Prepared: 06/05/1992
Analyzed: 06/08/1992

	QC EXPECTED CONCENTRATION	% REC S920605METQC
barium	5.0	100
beryllium	250	95
cadmium	250	94
chromium	500	99
copper	500	94
lead	500	100
nickel	500	97
silver	500	83
zinc	500	100

N.D. - Not Detected at specified detection limit.

Approved By: DE Date: 6/15/92

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 418.1
TOTAL PETROLEUM HYDROCARBONS QC - BLANK

Batch #: S920605TPH
Lab ID: S920605TPHB1
Matrix: Soil
Units: mg/kg dry

Prepared: 06/05/1992
Analyzed: 06/08/1992

	QC LIMIT	CDM METHOD BLANK S920605TPHB1
Pet. Hydrocarbon,IR	25	N.D.

N.D. - Not Detected at specified detection limit.

Approved By: DE Date: 6/15/97

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 418.1
TOTAL PETROLEUM HYDROCARBONS QC - DUP

Batch #: S920605TPH
Lab ID: 92-01528-DUP-TPH
Matrix: Soil
Units: mg/kg dry

Prepared: 06/05/1992
Analyzed: 06/08/1992

	QC LIMIT	SAMPLE RESULT	DUPLICATE RESULT	% RPD
Pet. Hydrocarbon,IR	25	N.D.	N.D.	N/A

N.D. - Not Detected at specified detection limit.
N/A - Not Applicable

Approved By: _____ Date: 1/15/92

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 6010/7000
TRACE METALS QC - BLANK

Batch #: S920605MET
Lab ID: S920605METB1
Matrix: Soil
Units: mg/kg dry

Prepared: 06/05/1992
Analyzed: 06/10/1992

	QC LIMIT	CDM METHOD BLANK S920605METB1
As	0.50	N.D.
Sb	2.0	N.D.
Se	1.0	N.D.
Tl	2.0	N.D.

N.D. - Not Detected at specified detection limit.

Approved By: DC Date: 6/15/92

CDM ANALYTICAL SERVICES LABORATORY
QUALITY CONTROL REPORT

METHOD: EPA 6010/7000
TRACE METALS QC - BLANK

Batch #: S920605MET
Lab ID: S920605METB2
Matrix: Soil
Units: mg/kg dry

Prepared: 06/05/1992
Analyzed: 06/10/1992

	QC LIMIT	CDM METHOD BLANK S920605METB2
As	0.50	N.D.
Se	1.0	N.D.

N.D. - Not Detected at specified detection limit.

Approved By: _____ Date: 6/15/92

CDM

environmental engineers, scientists, planners, & management consultants

CAMP DRESSER & McKEE INC.
Ten Cambridge Center
Cambridge, Massachusetts 02142
617 252-8000

August 6, 1992

Mr. Thomas DiPersio
Department of Environmental Protection
Massachusetts Contingency Plan - Waiver Program
10 Commerce Way
Woburn, Massachusetts 01801

Subject: Buckley & Mann, Inc., Norfolk, Massachusetts

Dear Mr. DiPersio:

Per your telephone request of July 13, 1992, Camp Dresser & McKee Inc. (CDM) is pleased to submit additional information on behalf of Buckley & Mann Inc. (B&M) to support B&M's MCP Waiver Application. This information was collected from B&M and CDM project archives.

Your questions are paraphrased below, along with our responses. Supporting documentation is attached.

1. Does B&M intend to include the entire site under the Waiver Application?

   Yes, but recognize that the majority of the site is uncontaminated, undeveloped land. The areas influenced by past industrial activities, and which are proposed for remediation, include the former dyehouse wastewater treatment lagoons and soils excavated from these lagoons, and the solid residues from the carbonizer process.

2. What are the locations and/or removal history of buried tanks?

   Prior to 1986, there were five buried tanks on the site. The locations of the tanks are shown on the attached drawing.

   Three of the tanks were removed on August 27, 1986 by U.S.T. Corporation. Copies of the manifest for disposal of the residual product from the tanks and the receipt for disposal of the tanks at a scrap yard are attached.

The tank removals were observed by Arthur Michelini of CDM and Norfolk Fire Chief William Kelly. The tanks included a 2,000-gallon gasoline tank, a 3,000-gallon mineral oil tank and a 275-gallon diesel fuel tank. CDM field notes from the day of the excavation are attached. All three tanks were in excellent condition, and the excavations from the 2,000- and 3,000-gallon tanks were free of contamination.

Some soil lightly contaminated with diesel fuel was discovered when the 275-gallon tank was removed. Excavation was continued until field tests with a photoionization detector showed less than 25 ppm in the soil remaining in the hole. Between 3 and 4 cubic yards of sandy soil were excavated as a result of this procedure. This soil was spread on-site to enhance evaporation of the fuel.

As of August 1992, two buried tank remain in service to store fuel for on-site space heating. One of these, a 12,000-gallon, two compartment tank for #2 fuel oil was leak tested and met the DEP criteria for tightness on November 12, 1986, as shown on the attached report from Leak Detection Systems, Inc. B&M reported that in 1986, the second tank, a 10,000-gallon #6 fuel tank, was emptied, cleaned and inspected. The tank was in excellent condition.

3. What are the locations of private water supply wells on the site, and adjacent to the site?

The enclosed drawing shows the locations of the two on-site wells, and the adjacent residential areas served by individual wells. CDM tested the on-site wells in 1986 and found them to be uncontaminated. The results were reported in the 1986 Site Assessment Report submitted with the Waiver Application. Based on the hydrogeology of the area, CDM concluded that private wells on property adjacent to the site were upgradient of the B&M site.

If you have any further questions, please contact Richard Mann at B&M or me at CDM.

Very truly yours,

CAMP DRESSER & McKEE INC.

Robert A. Dangel
Principal Scientist

/rad

Attachments:

Tank removal
- Residual product manifest
- Tank disposal receipt
- CDM field notes

Tank testing report

Drawing marked with the locations of former and current buried tanks and private wells.

File: 1121-6-RT

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF SOLID AND HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108

Bob M.

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator US EPA ID No. MAD000008720 — Manifest Document No.
2. Page 1 of — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: BUCKLEY MANN, 17 LAWRENCE ST NORFOLK MA.
4. Generator's Phone: 617 5290695

A. State Manifest Document Number: MA C091454
B. State Gen. ID:

5. Transporter 1 Company Name: MACDONALD & WATSON — 6. US EPA ID Number: RID093211760 — C. State Trans. ID: 21194 RI
7. Transporter 2 Company Name — 8. US EPA ID Number — D. Transporter's Phone: 401 946 0200 — E. State Trans. ID:
9. Designated Facility Name and Site Address: NARRAGANSETT IMP RESOURCE 223 ALLENS AVE PROV RI — 10. US EPA ID Number: RID006807911 — F. Transporter's Phone ( ) — G. State Facility's ID: Not Required — H. Facility's Phone: 401 331 7420

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE FLAMMABLE LIQUID NA 1270 NOS ORM-E	001	T	00500	G	D001
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.)
a. GAS, MINERAL OIL,
b. 2 OIL, WATER

K. Handling Codes for Wastes Listed Above
a. S02 — c.
b. T01 — d.

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and all applicable State laws/regulations. Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently avilable to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name: STEPHEN L. MANN — Signature: [signature] — Date: Month 08 Day 25 Year 86

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: RICHARD C. BRANCH JR — Signature: Richard C. Branch Jr — Date: Month 08 Day 25 Year 86

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: KARL E. PERSON — Signature: Karl E. Person BS — Date: Month 08 Day 28 Year 86

In case of emergency or spill, immediately call the National Response Center (800) 424-8802.

Form Approved OMB No. 2000-0404. Expires 7-31-88
EPA Form 8700-22 (Rev. 4-85 Previous addition is obsolete)

COPY>3: GENERATOR-MAILED BY TSDF

MA C091454 COPY>3: GENERATOR-MAILED BY TSDF

RECEIPT OF [redacted]POSAL OF UNDERGROUND STEEL STORA[redacted]TANK

NAME AND ADDRESS OF APPROVED TANK YARD: ~~State Line Scrap Co. Inc.~~ [illegible] 3032 Bacon St So. Attleboro, MA

APPROVED TANK YARD NO. _____

Tank Yard Ledger 502 CMR 3.03(4) Number: 86cc790

I certify under penalty of law I have personally examined the underground steel storage tank delivered to this "approved tank yard" by firm, corporation or partnership _____ and accepted same in conformance with Massachusetts Fire Prevention Regulation 502 CMR 3.00 Provisions for Approving Underground Steel Storage Tank dismantling yards. A valid permit was issued by LOCAL Head of Fire Department FDID# _____ to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

Mark Levy (SIGNATURE) Scalman (TITLE) 8/21/86 (DATE SIGNED)

This signed receipt of disposal must be returned to the local head of the fire department FDID# _____ pursuant to 502 CMR 3:00. (EACH TANK MUST HAVE A RECEIPT OF DISPOSAL)

FORM F.P. 291 (OVER) MASSACHUSETTS STATE FIRE MARSHAL'S OFFICE

RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK

NAME AND ADDRESS OF APPROVED TANK YARD: _____

APPROVED TANK YARD NO. _____

Tank Yard Ledger 502 CMR 3.03(4) Number: 86cc792

I certify under penalty of law I have personally examined the underground steel storage tank delivered to this "approved tank yard" by firm, corporation or partnership _____ and accepted same in conformance with Massachusetts Fire Prevention Regulation 502 CMR 3.00 Provisions for Approving Underground Steel Storage Tank dismantling yards. A valid permit was issued by LOCAL Head of Fire Department FDID# _____ to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

Mark Levy (SIGNATURE) Scalman (TITLE) 8/25/86 (DATE SIGNED)

This signed receipt of disposal must be returned to the local head of the fire department FDID# _____ pursuant to 502 CMR 3:00. (EACH TANK MUST HAVE A RECEIPT OF DISPOSAL)

FORM F.P. 291 (OVER) MASSACHUSETTS STATE FIRE MARSHAL'S OFFICE

STATE LINE SCRAP CO., INC. No 36671

SOUTH ATTLEBORO, MASS. 8/25 19__

FROM McDonald Watson

MATERIAL 1-2500 + 1-2000 MATERIAL 275 Gal

GROSS 43,200 lbs. GROSS Mc Card lbs.

TARE 38,800 lbs. TARE _____ lbs.

NET 4360 lbs. NET _____ lbs.

AMT. $_____ AMT. $_____

TOTAL_____ _____ WEIGHER

MEMORANDUM

CAMP DRESSER & McKEE INC.

TO: R. Daniel

FROM: A. Michelini

PROJECT: Buckley + Mann CDM # 1121-5

SUBJECT: Tank Excavation

DATE: 8/27/86

Arrived at B+M at 11:00 AM on 8/25/86 to observe the excavation and removal of 3 underground tanks and to analyze the soils for organic vapors with an HNu meter.

Tank I.D.

1. Gasoline tank, 2020 gal. by Bldg. 11
2. Mineral oil tank, 3000 gal, front of Bldg 1.
3. #2 Fuel oil tank, 260 gal., rear Bldg 1

Personnel

The excavation was supervised by Robert Mancini of U.S.T Corp with equipment from MacDonald + Watson Co.

Equipment

The equipment included the following:

1. Dump truck
2. Backhoe
3. Vacuum truck
4. Large bed truck for transporting tanks from site.
5. Equipment truck - tools, etc.

Procedure - Tank excavation + soil analysis.

Tank residues were removed with the vacuum truck. The soil was removed from around each tank and checked

MEMORANDUM

CAMP DRESSER & McKEE INC.

TO:

FROM:

PROJECT: Buckley + Mann CDM #

SUBJECT:

DATE:

gasoline tank and the mineral oil tank showed no evidence of contamination, either visually or from HNu readings. Soil adjacent to the 260 gal tank gave readings from 20–100 ppm on the HNu meter. About 3-4 yards were removed with the backhoe and stockpiled, or until the HNu readings were reduced to 25 or less within the excavation. Samples of the soil were collected for analysis - (petroleum hydrocarbons and ignitibility).

Soils collected adjacent to the underground 12,000 gal tank showed no contamination as indicated by 'zero' readings on the HNu. About 0.5" of the top soil showed dark discoloration, but the soil/sand below appeared to be normal.

LEAK DETECTION SYSTEMS, INC.
13 MAIN STREET
HINGHAM, MASSACHUSETTS 02043
617-740-1717

FEATURING TANK AUDITOR

November 12, 1986

Mr. Steve Mann
Buckley & Mann
17 Lawrence Road
Norfolk, Massachusetts 02056

Dear Mr. Mann:

The following presents a summary of tank tightness testing results for one compartmental tank located at the 17 Lawrence Street, Norfolk facility. Testing took place on November 10, 1986.

Tank #1 - 6300 Gallons per Compartment, #2 Fuel Oil
Testing from 10:33 a.m. to 10:43 a.m. (compartment A- Closest to office) at elevation 120¾" (18¾" above the tank), the system lost product elevation at the rate of:

$$\frac{20\text{cc}}{9\text{ lines}} \times \frac{6\text{ lines}}{10\text{ min.}} \times \frac{60\text{ min.}}{\text{hour}} = 80\text{cc/hour}$$

Testing compartment B from 10:55 a.m. to 11:04 a.m. at the same elevation, the system lost product elevation at the rate of:

$$\frac{20\text{cc}}{10\text{ lines}} \times \frac{2\frac{1}{2}\text{ lines}}{9\text{ min.}} \times \frac{60\text{ min.}}{\text{hour}} = 33\text{cc/hour}$$

The product elevation in both compartments was then dropped to 103" (just above tank top). Testing in compartment A from 12:03 p.m. to 12:14 p.m., the system "gained" product at the rate of:

$$\frac{50\text{cc}}{14\text{ lines}} \times \frac{9\frac{1}{2}\text{ lines}}{11\text{ min.}} \times \frac{60\text{ min.}}{\text{hour}} = 185\text{cc/hour}$$

Testing in compartment B from 12:40 p.m. to 12:50 p.m., the system "gained" product at the rate of:

$$\frac{190\text{cc}}{9\text{ lines}} \times \frac{\frac{1}{2}\text{ line}}{10\text{ min.}} \times \frac{60\text{ min.}}{\text{hour}} = 63\text{cc/hour}$$

Testing indicates some product drip back at the lower elevation test. This is the cause for the "gains" experienced at the 103" elevation. Testing at the upper elevation, some cooling of the product is experienced. Testing therefore indicates the system is in compliance with NFPA #329 criteria for a tight tank.

Very truly yours,

William E. Baird

William E. Baird, P.E.
President

Buckley
& Mann
INCORPORATED
ESTABLISHED 1901

SCANNED

9 June 1992

Attention: Tom DiPersio
DEQE-MCP Waiver Programs
10 Commerce Way
Woburn, MA 01801

Dear Mr. DiPersio:

I am writing to respond to item 7 page 11 of the waiver application form.

Buckley & Mann has manufactured textiles continuously on this site since about 1901. The owners are Richard & Stephen Mann, both with long experience and successors to the founders of the business. We have continued changing our business to make new products and adapt to new markets. We are going to continue to operate and maintain the business. As a small company, we try to plan our resource use carefully.

We first employed Camp Dresser & McKee before the creation of DEQE to advise us and have continued to do so. We are committed to remediate our site using professional engineers to oversee the procedures and testing and reporting to DEP and the town of Norfolk.

The waiver will enable us to proceed as rapidly as practical with an economical and effective plan (CDM 10/90 Revised Closure Plan). If granted, the waiver will speed the process and minimize the costs with no negative impact. We believe that the waiver is in the best interest of DEP, Buckley & Mann, Inc. and our Norfolk neighbors.

Very truly yours,

Richard D. Mann
President

Factory: 17 Lawrence Street, Norfolk, Massachusetts 02056 ▫ Mail: Box 409, Franklin, Massachusetts 02038
Telephone: (508) 528-0695 ▫ Telex: 4931680 ▫ Fax: (508) 528-1361

Department of Environmental Protection
Bureau of Waste Site Cleanup
Waiver Program

Tracking Number: 11054

Application Number: 92-3-0173-1

Site Name: Buckley & Mann Inc.

Site Address: 17 Commerce Rd
Norfolk

Date Received: 5/1/92

Date Reviewed: 5/6/92 By: Elaine Jones

Date Check Rcv'd: 5/11/92 Amt. of Check: $200

Outstanding Costs: _____ SDB ____ WDB ____

Additional Information Required	Date Requested	From Whom	Date Received
1)	1)	1)	1)
2)	2)	2)	2)
3)	3)	3)	3)

Date Sent to Region: 5/23/92

COMMENTS:

Commonwealth of Massachusetts Department of Environmental Quality Engineering

Potential Oil/Hazardous Material Release Site
PRELIMINARY ASSESSMENT REPORT

For DEQE Use Only
Case No. 3-0173
File Name Buckley + Mann
Date Listed
Disposition

I. PROPERTY NAME AND LOCATION (See Supplementary Instructions)

Property Name [1] Buckley and Mann, Inc.
Address 17 Lawrence Street, Norfolk, MA

UTM Coordinates [3]
N 46-63-088 M
E 3-05-325 M

Municipality [2]	Zip Code	USGS Quad(s) [4]	Latitude/Longitude
Norfolk	0256	Wrentham, MA 1964 revised 1979	42 06 23 N / 71 21 18 W

II. OWNERS/OPERATORS

		Date	
Present Owner: [5] Address:	Buckley and Mann, Inc. 17 Lawrence Street, Norfolk, MA	Date Acquired	Specific Property Use/Activity [6]
Contact:	Mr. Richard Mann Tel. 508-528-0695	1926	SIC # 2299 ☒ Active ☐ Inactive
Present Operator: Address:	SAME	Date Started	Specific Property Use/Activity
Contact:	Tel. - -		SIC # ____ ☐ Active ☐ Inactive
Previous Owner: Address:		From/To Dates	Specific Property Use/Activity
	Tel. - -		SIC # ____
Previous Operator: Address:		From/To Dates	Specific Property Use/Activity
	Tel. - -		SIC # ____

Additional Owner/Operator Information is: ___ Attached ___ Unknown X Not Pertinent

III. GENERAL PROPERTY/AREA INFORMATION

Site Locus Map Attached [7] ☐

Property/Area Use [8]	Property Present	Property Past	Surrounding Area
Industrial	X	X	___
Commercial	___	___	___
Residential	___	___	X
Agricultural	___	___	___
Undeveloped	___	___	X

Check if property is or ever was a known:
___ Refuse/Waste Disposal Area
___ Gasoline (Service) Station
X Fuel Storage Depot
___ Industrial Manufacturing Facility
___ Check if Property is Planned for Development

IV. REVIEW OF AVAILABLE RECORDS/INFORMATION

Municipal: Date Reviewed 1986 By Robert Dangel Of Camp Dresser & McKee
Information Source(s): Norfolk Town Assessor's Office
Contact Person(s): Telephone: 508-528-1120

State: [9] Date Reviewed 1986 By Robert Dangel Of Camp Dresser & McKee
Information Source(s): MDEP Woburn, MA
Contact Person(s): Telephone:

Owner/Operator: [10] Date Reviewed 1986 By Robert Dangel Of Camp Dresser & McKee
Information Source(s): Personal Communication
Contact Person(s): Mr. Richard Mann Telephone: 508-528-0695

Other: [11] Date Reviewed ___ By ___ Of ___
Information Source(s):
Contact Person(s): Telephone:

Additional Information/Information Sources are attached: ☐ Yes ☒ No.

IV. SURVEY OF AVAILABLE RECORDS/INFORMATION (Continued.)

Based upon records and available information, have petroleum products or hazardous materials been used, treated, stored, or disposed of, on the property?

☒ Yes ☐ No X Petroleum X Hazardous Materials

Underground Storage Tanks: [12] Records/Evidence of Present/Former Use: ☒ Yes ☐ No

Indicate Number of Tanks:	Gasoline	Fuel Oil	Waste/Other Oil	Hazardous Materials	Unknown
Presently On-site	0	2	___	___	___
Removed	1	2	___	___	___
*With Capacity 1100 Gallons	0	2	___	___	___
*Over 10 Years Old (Now On-Site)	0	2	___	___	___
Total Number:	1	4	___	___	___

Wastewater: [13]

	Generated?	Composition	Disposal
Present:	☐ Yes ☒ No ☐ Unknown	☐ Sanitary ☐ Industrial	☐ Municipal Sewer ☐ On-site ☐ Other
Past:	☒ Yes ☐ No ☐ Unknown	☐ Sanitary ☒ Industrial	☐ Municipal Sewer ☒ On-site ☐ Other

Comments: ___

Is there currently an on-site water supply well? ☒ Yes ☐ No ☐ Unknown. Active? ☒ Yes ☐ No.
Other existing means for sampling groundwater? ☒ Yes ☐ No

Indicate Present or Past Federal/State Environmental Permits/Regulations at the Property.

☒ N.P.D.E.S. ☐ Groundwater Discharge ☐ R.C.R.A. Generator ☐ R.C.R.A. TSD ☐ Air Quality ☐ Other

Comments: "General" NPDES Permit for Non-Contact Cooling Water-- Minor, Intermittent Use

Is/are there any record(s) of Criminal, Civil, or Administrative Actions, at the property due to (alleged) violations of environmental statute or regulation? ☒ Yes ☐ No Comments: Massachusetts "Final Judgment" for Buckley and Mann to perform a preliminary site assessment due to potential violation of Mass. Clean Water Act G.L.C. 21, SS 26-53, September, 1986

V. PROPERTY RECONNAISSANCE

Property Reconnaissance by Owner/Operator/Consultant: [14] (Circle one.)

Date 1986 By Robert Dangel Of Camp Dresser & McKee Inc.

Evidence of a Release of Oil or Hazardous Materials? ☒ Yes ☐ No ☐ Potential

If Yes/Potential, Based upon: ☒ visual ☐ olfactory ☒ analytical/screening

Comments: Analyses in 1986 identified chromium, lead and zinc concentrations above background concentrations in soils dredged from the facilitative Lagoons #1 and #2 and residue from the former carbonizer process debris. These metals, and petroleum hydrocarbons from dye carriers were also found in the sand/sludge in Lagoons #1 and #2. COD above background concentrations was found in groundwater directly adjacent to the lagoons.

FOR DEQE USE ONLY:

✓ On-site Reconnaissance ___ Off-site Reconnaissance By EPA/DEQE/(Contractor) (Circle one.)

Date 8/19/92 By Thomas D. Persio Of PEER Consultants

Evidence of a Release of Oil or Hazardous Materials? ☐ Yes ☐ No ☑ Potential

Comments: No evidence of oil noted during site walkover. Soil stockpiles present. Release confirmed based upon information and data submitted with waiver application. See memo to this file, dated September 28, 1992.

VI. PRELIMINARY ASSESSMENT SUMMARY/REPORTING MATRIX

Based upon a review and evaluation of available records, information, and field observations, indicate and summarize applicable property conditions. Abbreviations and table headings are explained at the bottom of the page; additional guidance is contained in direction section. **Please note that responses are mandatory in shaded columns.**

SOURCE	Past/Present Existence [15]			Test Data Available [16]			Evidence of OHM Contamination/Release [17]		COMMENTS [18]
	Yes	No	Information Source (f)	Yes	No	Describe (g)	Rec. Obs. Test	None	
On-Site (Non-Liquid) Waste Disposal (a)	X		field observation company records		X			X	Solid residues from recycling of woolen clothing was disposed on site.
Surficial OHM Discharge or Spillage		X	company records		X			X	
Surficial Wastewater Discharge (b)	X		dyehouse facultative wastewater treatment lagoons	X		Soil samples and lagoon sludge samples	X		Dyehouse operations closed in 1986.
Subsurface OHM Discharge (c)		X			X			X	
Subsurface Wastewater Discharge (d)		X			X			X	
Underground Storage Tank(s) - Oil - (e)	X		communication with owner		X			X	
Underground Storage Tank(s) - Haz. Materials -		X			X			X	
Above-Ground Oil/Haz. Material Storage Tank(s)		X			X			X	
Other:		X			X			X	
Unknown Source but Evidence of Contamination		X			X			X	

FOOTNOTES: (a) includes refuse, demolition wastes, sludges, hazardous wastes; (b) includes domestic or industrial sewage, surface impoundments; (c) via dry wells, leach fields, injection wells, etc.; (d) includes domestic or industrial sewage leach fields/pits; (e) note: waste oil is considered a "hazardous material"; (f) records, field observation, etc.; (g) includes tank testing data, geophysical data, analytical data, etc.
ABBREVIATIONS: Rec = Records; Obs = Observations; OHM = Oil or Hazardous Material

ADDITIONAL COMMENTS: [19]

Property Access: [20] ☐ Restricted ☐ Unrestricted ☒ Partially Restricted | Property Ownership: ☒ Private ☐ Governmental ☐ Military

VII. CONCLUSIONS AND CERTIFICATIONS

Based upon all available information and data, pursuant to MGL Chapter 21E, is there evidence that a release of oil or hazardous materials has or is occurring at the property? ☒ Yes ☐ No ☐ Unknown at this time

Do property conditions constitute a threat of release? ☐ Yes ☒ No ☐ Potential

If either of above is "Yes", are immediate site actions necessary to abate an imminent hazard to public health, safety, welfare, or the environment, due to:

____ Proximity to known potable water supplies?	☐ Yes	☒ No
____ Potential for direct human contact and exposure?	☐ Yes	☒ No
____ Potential for fire or explosion?	☐ Yes	☒ No
____ Proximity to fisheries/critical habitats?	☐ Yes	☒ No
____ Other: _____	☐ Yes	☐ No

If a release has been confirmed, are immediate actions necessary to initiate abatement, containment, or recovery actions, in order to avoid a situation where a delay in remedial actions will substantially decrease the efficiency and/or degree of ultimate cleanup?

☐ Yes ☒ No

Have remedial actions already been taken at the site? ☒ Yes ☐ No

NOTE: If immediate actions are needed, or if remedial actions have already been taken at the site, append complete details on nature of problem and proposed/completed site actions.

(Owner)/Operator/Private Party (Circle one.)

Name: Buckley and Mann, Inc.
Title: Richard Mann, President
Company: Buckley and Mann, Inc.
Date: April 1992
Property Affiliation: _____

Professional Environmental Consultant

Name: Robert Dangel
Title: Principal Scientist
Firm: Camp Dresser & McKee Inc.
Date: April 1992, July , 1986

☒ Additional information attached to Form

Indicate Name(s) of Environmental Assessment Report(s) prepared for Property: Report on an Environmental Site Assessment of Buckley and Mann, Inc., Norfolk, MA; Status Report and Revised Lagoon Closure Plan for Buckley and Mann, Inc., Norfolk, MA, October 1990.

If Form completed by Private Party and/or Professional Environmental Consultant, please sign:

I hereby certify that the information furnished in and with this Form, to the best of my knowledge, is true, accurate, and complete.

Signature: _____ (Owner/Operator/Private Party) Signature: _____ (Consultant)

VIII. DISPOSITION OF CASE

FOR DEQE USE ONLY:

Form completed by: PRP/(Consultant)/DEQE/DEQE Contractor/Other (Circle one.) Date Received: 6/2/92

If not compiled by DEQE, is provided information: ☒ Adequate ☐ Insufficient ☐ Inaccurate

Conclusions: ☐ No Evidence of Release ☒ Release Confirmed ☐ Potential Release - Further Investigation Required

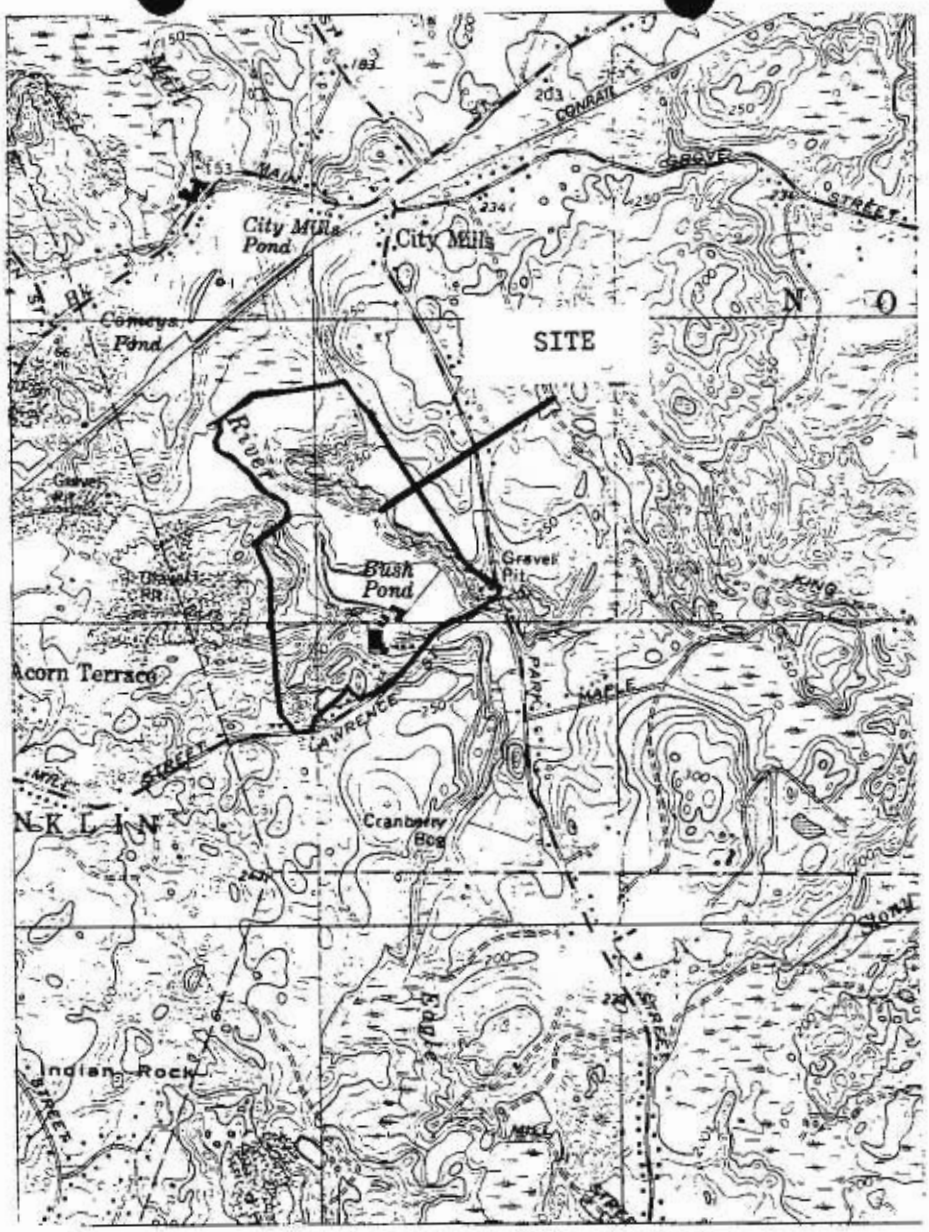
Disposition of Case: ☐ No Action ☐ Re-do P.A. ☒ Perform S.I. ☐ Perform IRM ☐ Other

Enforcement Position: ☐ N.A. ☐ Send N.O.R. ☐ N.O.R. sent _____ ☒ Other

Comments: Waiver applicant

DEQE STAFF: Thomas DiPersio TITLE: Environmental Engineer

SIGNATURE: Thomas DiPersio DATE: 8/20/92



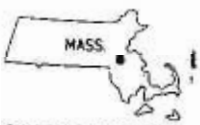


FIGURE 1

SITE LOCATION

WRENTHAM, MASS.
N4200—W7115/7.5

1964
PHOTOREVISED 1979
AMS 6768 III SE-SERIES V814

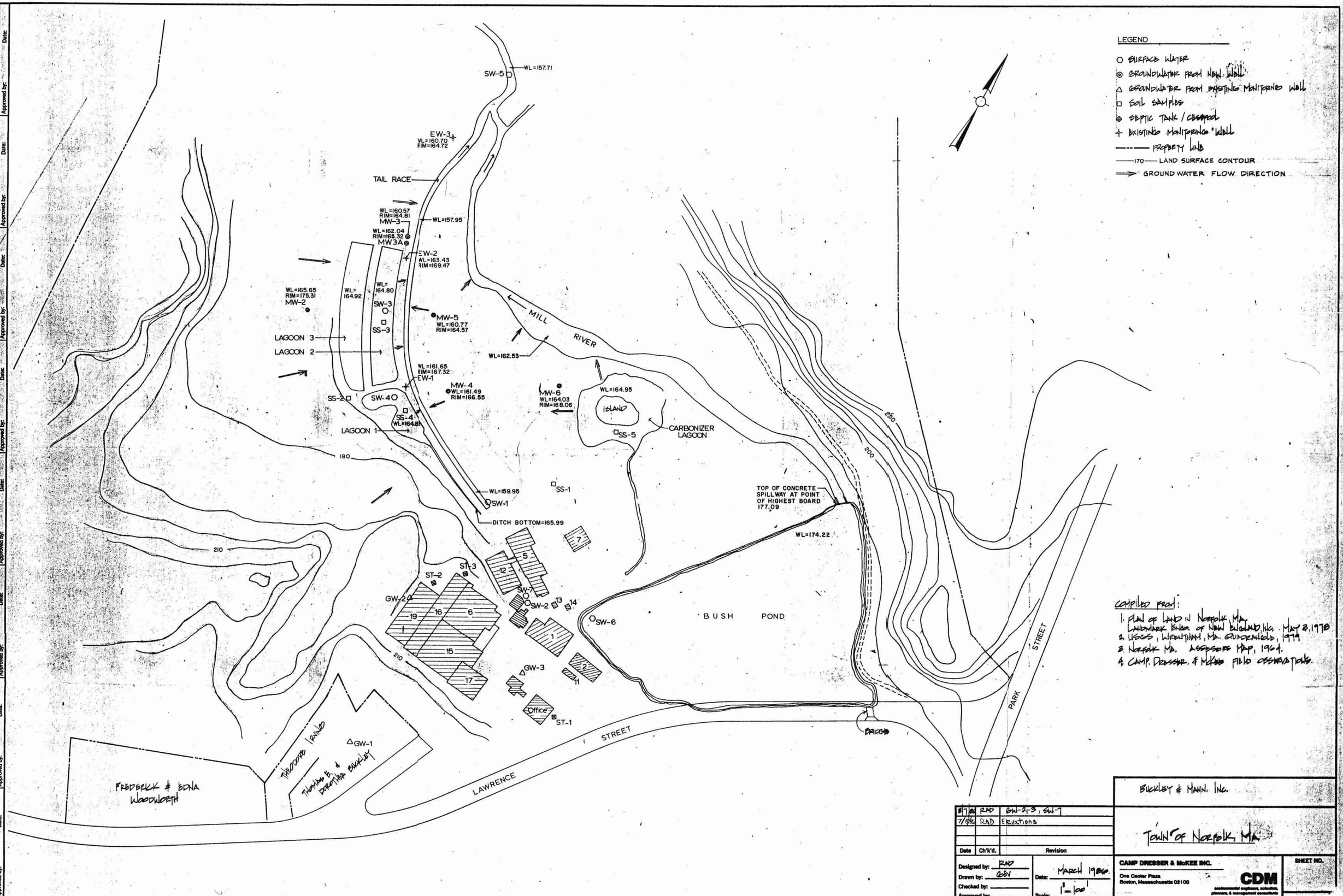
SCALE 1:25 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



COMPILED FROM:

1. PLAN OF LAND IN NORFOLK, MA. LANDMARK ENGG. OF NEW ENGLAND, INC. MAY 8, 1978
2. USGS, WRENTHAM, MA. QUADRANGLE, 1974
3. NORFOLK MA. ASSESSORS MAP, 1964.
4. CAMP, DRESSER & MCKEE FIELD OBSERVATIONS.

No.	Date	Ch'k'd.	Revision
#7		RAD	GW-2, -3, EW-3
7	8/82	RAD	Elevations

BUCKLEY & MANN, INC.

TOWN OF NORFOLK, MA

Designed by: RAD
Drawn by: CBV
Checked by:
Approved by:

Date: MARCH 1980

Scale: 1" = 100'

CAMP DRESSER & McKEE INC.
One Center Plaza
Boston, Massachusetts 02108

CDM
environmental engineers, scientists, planners, & management consultants

SHEET NO.

ARCHITECTURAL Approved by: Date:
STRUCTURAL Approved by: Date:
ELECTRICAL Approved by: Date:
INSTRUMENTATION Approved by: Date:
HVAC Approved by: Date:
PLUMBING Approved by: Date:
PROJECT ENGINEER Approved by: Date:
PROJECT MANAGER Approved by: Date:

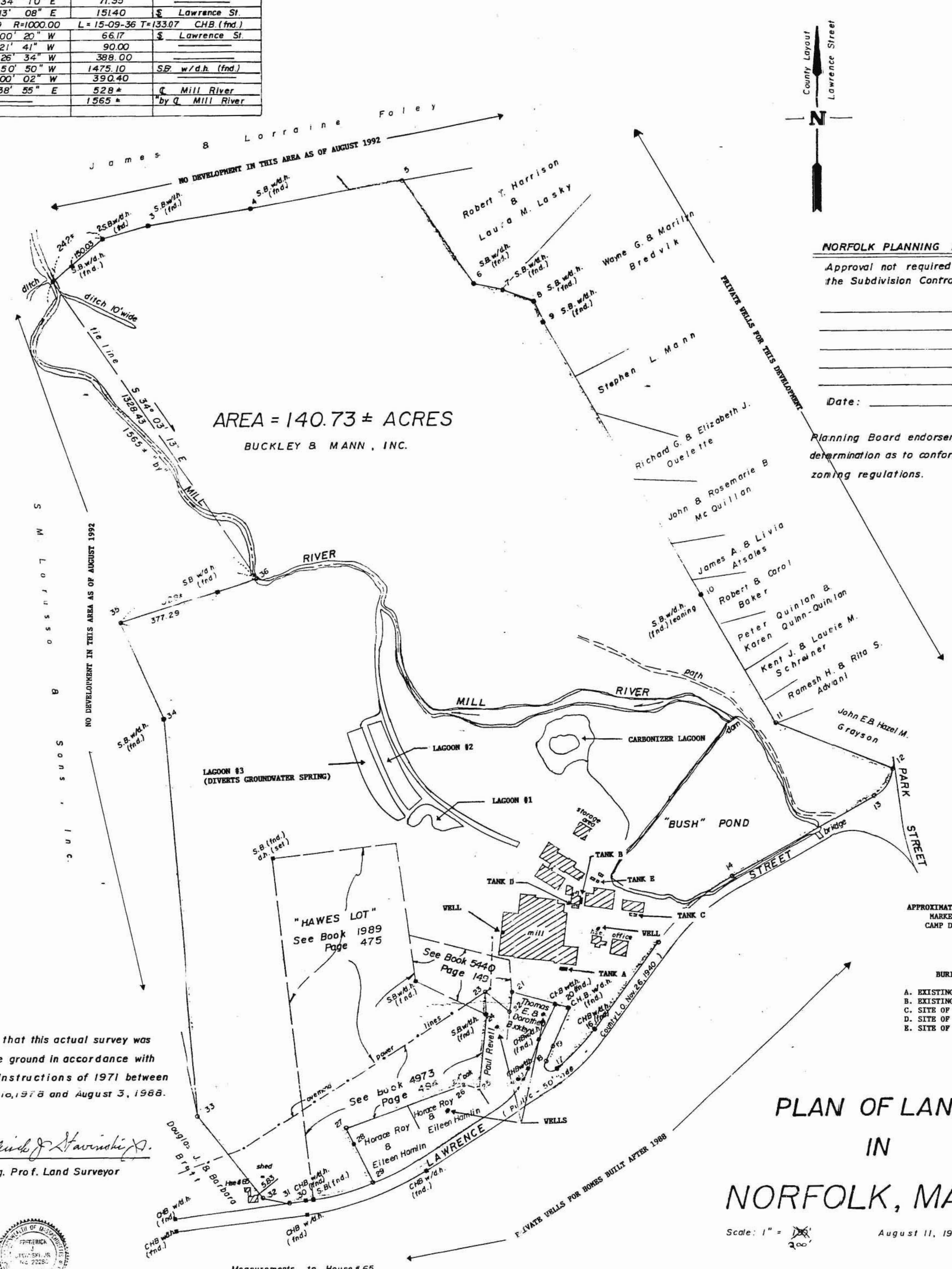
MAKEPEACE 88907

NORFOLK ASSESSORS MAP 6 BLOCK 2 PARCEL 3
MAP 7 BLOCK 42 PARCEL 3

ZONING: BUSINESS & RESIDENCE R-3

PROPERTY LINE TRAVERSE

POINT	BEARING	DISTANCE	DESCRIPTION
1	———		centreline Mill River
2	N 49° 25' 50" E	242±	S.B. w/d.h. (fnd.)
3	N 74° 16' 17" E	173.14	"
4	N 81° 17' 07" E	383.99	"
5	N 79° 26' 54" E	557.62	———
6	S 34° 17' 14" E	472.46	S.B. w/d.h. (fnd.)
7	S 80° 31' 52" E	99.78	"
8	S 70° 33' 24" E	126.99	"
9	S 20° 47' 43" E	79.93	"
10	S 29° 55' 03" E	1166.07	" (leaning)
11	S 29° 53' 43" E	554.81	ctr. F.S.B. w/ring of stones (fnd.)
12	S 68° 56' 27" E	452.82	℄ Lawrence St.
13	L = 134.81 R=140.00	Δ=55-10-14 T=73.14	"
14	S 60° 41' 30" W	591.20	"
15	L = 363.55 R=850.00	Δ=24-30-20 T=173.74	"
16	S 36° 11' 10" W	396.67	C.H.B. w/d.h. (fnd.) "
17	L=199.24 R=800.00	L=14-16-10 T=100.14	———
18	L= 65.48 R= 25.00	L=150-04-00 T= 93.52	———
19	N 20° 31' 20" E	61.33	℄ Lawrence St.
20	N 24° 08' 10" E	150.10	C.H.B. w/d.h. (fnd.)
21	N 74° 41' 50" W	215.60	———
22	S 09° 20' 23" W	74.00	———
23	N 56° 02' 57" W	107.67	———
24	S 04° 13' 41" E	65.85	S.B. w/d.h. (fnd.)
25	S 05° 58' 39" W	272.00	———
26	N 73° 55' 44" W	59.58	24" oak
27	S 68° 56' 48" W	455.97	———
28	S 25° 34' 10" E	71.35	———
29	S 28° 13' 08" E	151.40	℄ Lawrence St.
30	L = 264.59 R=1000.00	L = 15-09-36 T=133.07	C.H.B. (fnd.)
31	S 83° 00' 20" W	66.17	℄ Lawrence St.
32	N 80° 21' 41" W	90.00	———
33	N 37° 26' 34" W	388.00	———
34	N 04° 50' 50" W	1475.10	S.B. w/d.h. (fnd.)
35	N 25° 00' 02" W	390.40	———
36	N 72° 38' 55" E	528±	℄ Mill River
37	———	1565±	"by ℄ Mill River



NORFOLK PLANNING BOARD

Approval not required under the Subdivision Control Law.

_____

_____

_____

_____

_____

Date: _____

Planning Board endorsement is not a determination as to conformance with zoning regulations.

AREA = 140.73 ± ACRES

BUCKLEY & MANN, INC.

NOTE
APPROXIMATE TANK AND WELL LOCATIONS MARKED ON THIS DRAWING BY CAMP DRESSER & McKEE INC., AUGUST 1992.

BURIED TANK LEGEND

A. EXISTING 12,000 GAL #2 FUEL OIL
B. EXISTING 10,000 GAL #6 FUEL OIL
C. SITE OF FORMER 2,000 GAL GASOLINE
D. SITE OF FORMER 3,000 GAL MINERAL OIL
E. SITE OF FORMER 275 GAL DIESEL FUEL

I certify that this actual survey was made on the ground in accordance with the Land Instructions of 1971 between December 16, 1978 and August 3, 1988.

Frederick J. Stavinski Jr.
Reg. Prof. Land Surveyor

FREDERICK J. STAVINSKI JR. No. 22280

Measurements to House # 65 were taken from wood corner board

This survey and plan were prepared in accordance with the Procedural and Technical Standards for the Practice of Land Surveying in the Commonwealth of Massachusetts.

Frederick J. Stavinski Jr.
Reg. Prof. Land Surveyor

I certify that this plan was prepared in accordance with the Land Court Instructions of 1971.

Frederick J. Stavinski Jr.
Reg. Prof. Land Surveyor

PLAN OF LAND
IN
NORFOLK, MASS.

Scale: 1" = 200' August 11, 1988

Stavinski Engineering Associates, Inc.
Reg. Prof. Land Surveyors & Reg. Prof. Engineers
78 South St. Wrentham, Mass.

0 200 400 600
Scale of this plan in feet

Thomas C. McMahon
Director

The Commonwealth of Massachusetts

Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Division of Water Pollution Control
One Winter Street, Boston, Mass. 02108

MEMORANDUM FOR THE RECORD

TO: Butch Lord
→ Richard Chalpin
FROM: Mark Paré
DATE: July 23, 1986
SUBJECT: Commonwealth of Massachusetts v. Buckley & Mann, Inc.
Suffolk Civil Action No. 83618

Enclosed please find a copy of a site assessment report submitted to the Department by Buckley and Mann, Inc. in partial fulfillment of the requirements a draft consent judgement for this case. A copy of the final judgement will be sent to you as soon as it is available for release.

I would appreciate receiving any comments you might have concerning the contents of the site assessment report. D.E.Q.E. has committed to respond to Buckley & Mann, Inc. in writing within 60 days of the submittal of this report. Therefore, I would need your comments prior to September 8, 1986 so that I can include them in the official response.

If you have any questions please do not hesitate to contact me at 292-5893.

Enclosure

MP/cp

Buckley & Mann

BOX 409, FRANKLIN, MASSACHUSETTS 02038 ■ TELEPHONE (617) 528-0695 ■ PLANT AT NORFOLK, MASSACHUSETTS

July 16, 1986

Mark K. Pare',P.E.
Dept of Environmental Quality Engineering
Commonwealth of Mass.
One Winter Street
Boston,Ma. 02108

Dear Mr. Pare':

As agreed upon in conversation between Mr. Henry Malkasian and Mr. James Milkey and in compliance with the consent decree as amended in this conversation, Buckley & Mann, Inc. has enclosed a preliminary site assesment prepared by our engineering consultant, Camp, Dresser & McKee, Inc.

We have also enclosed a letter describing our in ground tanks and future disposition thereof.

Very truly yours,

BUCKLEY & MANN, INC.

RICHARD D. MANN

RDM:mp
encs. 2 - 1. Engineering Report -Camp Dresser & McKee
2. Letter to DEQE - Buckley & Mann, Inc.

Copies to: James R. Milkey, Esq. Attorney Generals Office
Henry Malkasian, Esq. Attorney
Mr. Robert Dangel, Camp Dresser & McKee, Inc.

Buckley & Mann

BOX 409, FRANKLIN, MASSACHUSETTS 02038 ■ TELEPHONE (617) 528-0695 ■ PLANT AT NORFOLK, MASSACHUSETTS

July 16, 1986

Mark K. Pare',P.E.
Dept of Environmental Quality Engineering
Commonwealth of Mass.
One Winter St.
Boston,Ma. 02108

Dear Mr. Pare':

The information which has been requested about the underground tanks at Buckley & Mann, Inc. is as follows:

Tank	Location	Volume	Type	Age	Content
1.	Boiler House	10,000 gal.	Steel	23	#6 Oil
2.	Next to Bldg#15	12,600 "	Steel	18	#2 Oil
3.	Fire Engine	260 gal.*	Steel	25*	#2 Oil
4.	Gasoline	2,020 "	Steel	8	Gasoline
5.	Next to Bldg. #1	3,000 "*	Steel	40*	Mineral Oil

* Estimated

The Company intends to continue to use tanks #1 and #2.

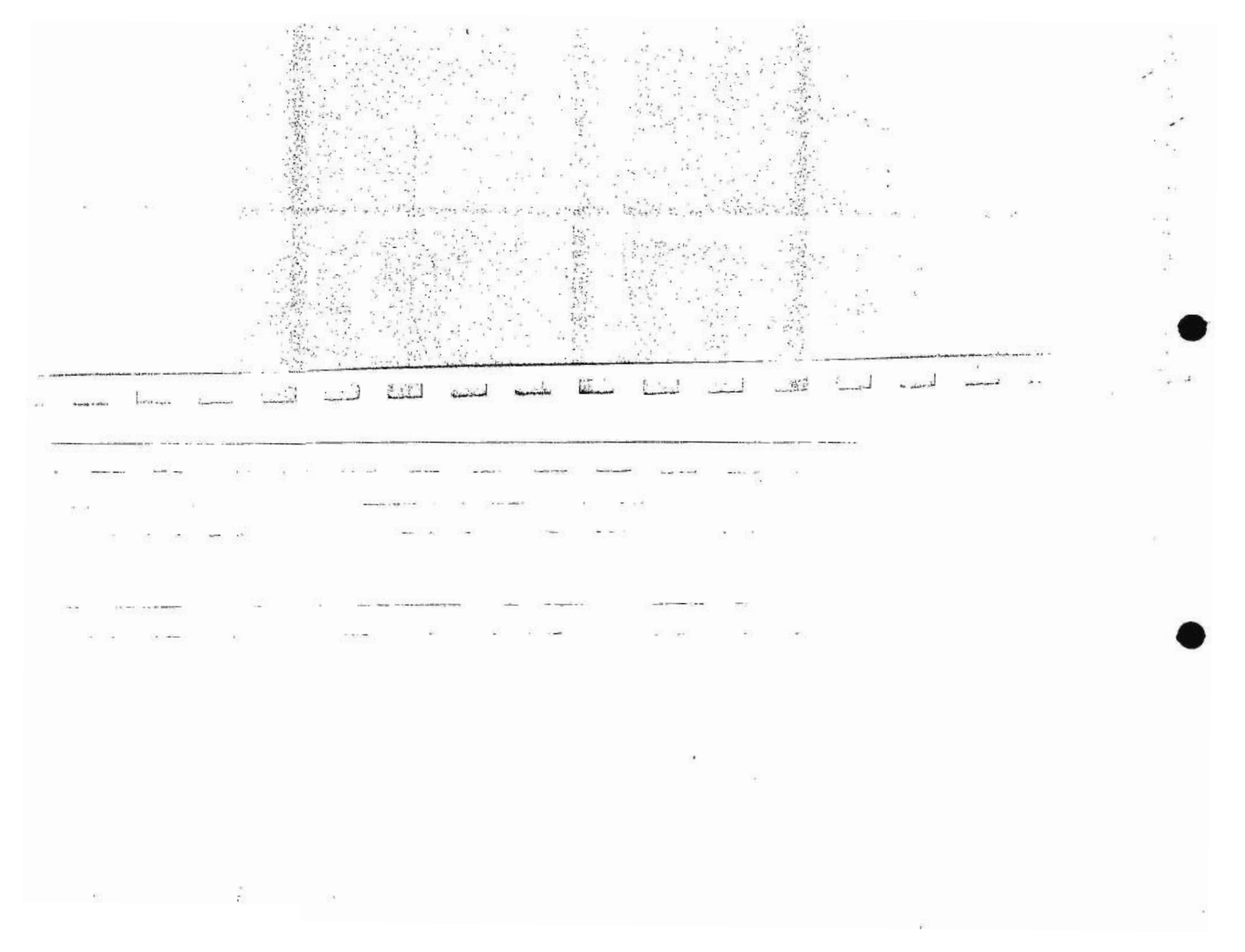
The Company intends to remove and dispose of tanks #3, #4 and #5 in the manner prescribed by the State of Massachusetts and in accordance with the agreement to be entered into between Buckley & Mann, Inc. and the State of Massachusetts.

Very truly yours,

BUCKLEY & MANN, INC.

RICHARD D. MANN

RDM:mp



remainder, basic dyes accounted for about 8% and acid dyes for th
2%. In earlier years, chrome dyes were applied to wool. The tot
water flow was estimated by B&M at 30,000 to 40,000 gallons per
wastewater was discharged via a ditch to Lagoon #1 for settling a
facultative biological treatment.

In 1978, B&M constructed two new lagoons to supplement Lagoon #1.
#2 received the overflow from Lagoon #1. The wall of Lagoon #3
breached in 1978 to drain a groundwater spring which upwelled int
lagoon. Lagoon #3 remains as a large diversion ditch and has ne
received wastewater.

The industrial activities at B&M have been conducted in a cluste
buildings near Lawrence Street. The area north of the buildings
Lagoon #1 and the Carbonizer lagoon, is covered with varying amou
fiber wastes, carbonizer residue (including buttons), and buildi
machinery debris. The dike separating the Carbonizer lagoon fro
River is made of soil mixed with fiber residue from dredging the
probably prior to 1940. The areas outside the immediate vicinity
manufacturing buildings support a hardwood forest.

The site and the neighboring properties are shown in Figure 1.
uses are residential, proposed residential and undeveloped and a
separated from B&M's activities by virtue of B&M's boundaries.

GEOLOGY AND HYDROGEOLOGY

Regional Conditions

The geology and hydrogeology of the area was described in a Dece
untitled draft report by Goldberg-Zoino and Associates (GZA). T
study area was to the south side of Lawrence Street, across from
reviewed the topography of the area from the USGS Wrentham map a
visit. CDM also reviewed the hydrogeology from the USGS Massach
Hydrologic - Data Report No. 19 for the Charles River Basin to c

Water elevations relative to the top of the well casings were measured on May 7, 1986, before sample collection. On June 10-11, 1986, the elevations of top of the well casings were determined, along with several surface water elevations, in a survey by Stavinski Engineering Associates, Inc. The elevations of the well casings, groundwaters and surface waters are shown on the Drawing.

Based on the survey data, the lowest water elevation line in the study area is along the Tailrace. Ground and surface water elevations to the west of the Tailrace, including Lagoons 1, 2 and 3 and wells MW-3, EW-1, EW-2 and EW-3 were higher than observed in the Tailrace, generally as would be expected from the ground surface contours. The bedrock well, MW-3A, near the Tailrace had a 1.5 foot higher water level than the adjacent well MW-3 constructed in the unconsolidated overburden soils. Water elevations in monitoring wells MW-4, MW-5 and MW-6 and the Carbonizer lagoon indicate the presence of a groundwater mound between the Mill River and the Tailrace. General groundwater flow directions are shown by the arrows on the Drawing.

The site data confirms that the general description of the regional geo-hydrology in the Mill River valley, prepared by GZA is accurate, except that the Tailrace as well as the Mill River are groundwater discharge locations in the B&M study area. The bedrock well (MW-3A) water elevation indicates that there is a vertical flow up from the bedrock to the unconsolidated overburden in the vicinity of the Tailrace, as would be expected at a discharge location.

SAMPLING AND ANALYSIS

The sampling and analysis plan shown in Table 1 was prepared after several discussions between CDM and the DEQE. CDM was able to collect and analyze all of the samples described in the plan, with the exception of four soils and sludges from the lagoons, as explained below.

Twelve-inch soil cores from Lagoon #1 showed about a 6" layer of organic sludge including some leaves and fiber, underlain by a mixture of sand and

TABLE 1 (Cont'd)
BUCKLEY & MANN SITE
SAMPLING AND ANALYSIS PLAN (Cont'd)

TABLE 1
BUCKLEY & MANN SITE
SAMPLING AND ANALYSIS PLAN
(X - Sample collected and analyzed. O - Sample omitted)

Sample Code	Sample Name	VOA	Metals	B/N	pH, SC, Alk, T	Anions	COD	Comment
SW-1	Tailrace at culvert exit downstream of Dyehouse	X	X	X	X	X		Test for Hg
SW-2	Boiler Blowdown				X	X		Test for Fe, Na
SW-3	Lagoon #2	X	X	X	X	X	X	
SW-4	Lagoon #1	X	X		X		X	
SW-5	Mill River 100 Ft below confluence with Tailrace	X	X		X	X		
SW-6	Bush Pond	X	X		X	X		
SW-7	Cooling Waters				X			
MW-2	Upgradient Watertable Well	X	X	X	X	X	X	
MW-3	Watertable Well N. of Lagoon #2	X	X	X	X	X	X	
MW-3A	Bedrock Well N. of Lagoon #2	X	X	X	X	X	X	
MW-4	Watertable Well near drums in Old Disposal Area	X	X		X		X	
MW-5	Watertable Well between Tailrace and Mill River (WP-1)	X	X	X	X		X	

TABLE 2

CONVENTIONAL PARAMETERS

	Bush Pond SW-6	Trailrace Head SW-1	Cooling Water SW-7	Mill River SW-5	Upgradient Well MW-2	Bedrock Well 25 Law. St. GW-1	Bedrock Well B & M GW-2	Dug Well B & M GW-3
pH	6.59	6.04	6.68	7.02	6.43	6.94	6.39	6.71
Temp., ^{o}C	15.2	13.0	26.0	14.8	8.1	13.3	-	12.4
Conductivity, umho	158	160	153	152	74	168	221	208
Alkalinity, mg/l as $CaCO_3$	18	35	19	28	17	110	68	13
Chloride, mg/l	27	36	44	30	7.4	<0.5	21	68
Nitrate, mg/l	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	2.3	7.2
Sulfate, mg/l	12	8.3	12	11	10	5.0	14	10
COD, mg/l	-	-	-	-	50	-	-	-

Fluoride, nitrite and bromide were <0.5 mg/l in all samples.

Orthophosphate was <1.0 mg/l in all samples.

TABLE 2 (Cont'd)
CONVENTIONAL PARAMETERS

	MW-3	Bedrock Well MW-3A	MW-4	MW-5	MW-6	EW. 1,2,3	Lagoon #1 SW-4	Lagoon #2 SW-3	Boiler Blowdown SW-2
pH	6.23	6.89	6.42	6.20	6.45	-	7.18	6.70	9.2
Temp., ^{o}C	-	9.5	9.0	8.0	7.8	-,8.9, -	-	-	85
Conductivity, umho	86	102	92	100	153	-	730	352	1330
Alkalinity, mg/l as $CaCO_3$	18	32	17	24	25	-	270	130	320
Chloride, mg/l	14	12	7.8	14	24	-	22	14	75
Nitrate, mg/l	0.8	8.2	1.6	0.7	<0.5	-	<0.5	<0.5	0.6
Sulfate, mg/l	9.8	10	11	9.4	9.7	-	170	74	240
COD, mg/l	<10	<10	<10	<10	40	<10,<10,140	440	360	-

Fluoride, nitrite and bromide were <0.5 mg/l in all samples
Orthophosphate was 2.8 mg/l in SW-4, 2.4 mg/l in SW-3, 3.6 mg/l in SW-2 and <1.0 mg/l in all other samples.

TABLE 3

METALS

(All Concentrations in mg/l)

	Bush Pd. SW-6	Trailrace Head SW-1	Mill River SW-5	Upgradient Well MW-2	Bedrock Well 25 Law. St. GW-1	Bedrock Well B & M GW-2	Dug Well B & M GW-3
Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Al	0.13	0.29	<0.1	0.21	<0.1	0.22	0.11
As	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Cd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Fe	0.13	2.8	0.16	<0.025	0.44	<0.025	0.13
Na	20	20	21	8.1	14	21	31
Pb	<0.003	0.004	<0.003	<0.003	0.004	0.006	0.005
Se	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zn	<0.02	<0.02	<0.02	<0.02	0.02	0.02	<0.02
Hg		<0.0004					

SW-2 Boiler Blowdown Fe 4.5, Na 260

TABLE 3 (Cont'd)

METALS

(All concentrations in mg/l)

	MW-3	Bedrock Well MW-3A	MW-4	MW-5	MW-6	Lagoon #1 SW-4	Lagoon #2 SW-3
Ag	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Al	0.15	<0.1	0.12	0.31	0.32	0.61	0.27
As	<0.16	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Cd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cr	<0.025	<0.025	<0.025	<0.025	<0.025	0.72	0.09
Fe	<0.025	<0.025	0.11	0.96	1.9	0.76	2.1
Na	9.5	8.3	6.1	9.1	18	180	73
Pb	<0.003	<0.003	0.007	<0.003	0.003	0.03	0.009
Se	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Zn	0.03	<0.02	<0.02	<0.02	<0.02	0.23	0.10

TABLE 3 (Cont'd)

METALS

(All concentrations in mg/kg)

	Soils SS-1	Soils SS-2	Lagoon #1 Sludge SS-4	Lagoon #1 Sludge SS-4A	Lagoon #2 Sludge SS-3	Carbonizer Lag. Sludge SS-5	Carbonizer Lag. Sludge SS-5A
Ag	16	<1.0	<1.0	<1.0	<1.0	5.7	<1.0
Al	27,000	11,000	7600	5900	5900	6700	13,000
0.1 — As	21	12	2.1	2.9	1.3	4.7	2.7
0.5 — Cd	28	<2.5	<2.5	<3.8	<2.8	18	2.9
100 — Cr	1000	2100	270	1300	430	450	62
Fe	110,000	13,000	10,000	8400	7700	7600	5800
Na	1300	97	250	850	311	200	96
10.0 — Pb	1200	38	12	19	12	670	88
0.84 — Se	0.35	0.50	<0.19	0.57	<0.21	0.97	0.44
27.7 — Zn	8200	110	930	4600	230	920	260
0.03 — Hg							

TABLE 4
VOLATILE ORGANIC COMPOUNDS
(All concentrations in ug/l for water and ug/kg/ for soil and sludge)

	Bush Pd. SW-6	Tailrace Head SW-1	Mill River SW-5		MW-2	Bedrock Well 25 Law. St. GW-1	Bedrock Well B & M GW-2	Dug Well B & M GW-3
Detection Limit	10	10	10		10	10	10	10
None	*	*	*		*	*	*	*

	MW-3	Bedrock Well MW-3A	MW-4	MW-5	MW-6	Lagoon #1 SW-4	Lagoon #2 SW-3
Detection Limit	10	10	10	10	10	10	10
None	*	*	*	*	*	*	*
1,1,1-Trichloroethane						P	
Toluene						P	
Xylenes						45	

	Soils SS-1	Lagoon #1 Sludge SS-4A	Carbonizer Lag. Sludge SS-5	Carbonizer Lag. Sludge SS-5A	Septic Tank ST-1	Septic Tank ST-2	Septic Tank ST-3
Detection Limit	25	45	25	25	10	10	10
None	*		*	*	*	*	*
Trichloroethene		45					
Benzene		P					
1,1,2,2-Tetrachloroethene		P					
Toluene		150				91	
Chlorobenzene		1100					
Ethyl benzene		860					
Xylenes		2100				20	

* None - No priority pollutants and no other compounds detected.
P = Present, but at a concentration below the detection limit.

TABLE 5
BASE/NEUTRAL EXTRACTABLE COMPOUNDS
(All concentrations in ug/l)

	Tailrace Head SW-1	MW-2	Bedrock Well 25. Law. St. GW-1	Bedrock Well B & M GW-2	Dug Well B & M GW-3	MW-3	Bedrock Well MW-3A	MW-5
Detection Limit	10	10	10	10	10	10	10	
None	*		*	*	*			
Benzamide N-(1,1-dimethylethyl) -4-Methyl-		6						27
Benzenesulfonamide, N-Butyl						32	11	

*None - No priority pollutants and no other compounds detected.

TABLE 5 (Cont'd)
BASE/NEUTRAL EXTRACTABLE COMPOUNDS

	Lagoon #2 Water SW-3 ug/l	Lagoon #1 Sludge SS-4 ug/kg	Lagoon #1 Sludge SS-4A ug/kg	Septic Tanks ST-C ug/l
Detection Limit	10	3300	1700	10
Priority Pollutants				
1,3-Dichlorobenzene			3200	
1,4-Dichlorobenzene			9100	34
1,2-Dichlorobenzene			5700	
Hexachloroethane	22			
1,2,4-Trichlorobenzene		1600	61,000	
Napthalene	50	10,000	8700	
Acenaphthene	73	8600	5300	
Fluorene	47	3400		
Phenanthrene	33			
Other Compounds				(See Appendix B)
Benzamine	53			
Benzene, 2-ethyl-1,4Dimethyl-	95	7700	3800	
Napthalene, 2-Methyl-	250	11,500	13,000	
1,1-Biphenyl	340	23,000	29,000	
Heptadecane	150	7000	6500	
Dibenzofuran	50	4700		
Isoquinoline		1400		
Naphthalene,2,3-Dimethyl		1300		
Naphthalene,1,2-Dimethyl		2100		
Phenol, 4-Nonyl		10,000	11,000	
Benzene,1,2,3-Trichloro-			4700	
Benzene, 1,2,3,5-Tetramethyl			5400	
Phenol, 4-(2,2,3,3-Tetramethylbutyl)-			6300	

based upon?

No metals were found above trace levels, except for iron, aluminum and sodium, which were present at concentrations typical for the area. No volatile organic compounds were found. No base/neutral priority pollutants were found, although traces of surfactants were found in four wells.

The COD was less than 10 mg/l in MW-3, 3A, 4 and 5 and EW 1 and 2. The COD was 50 mg/l in the upgradient well MW-2, 40 mg/l in MW-6 and 140 mg/l in EW-3. There is no pattern in the higher COD samples, in terms of proximity to the lagoons or groundwater elevation. EW-3 and MW-6 are near swampy areas, which may account for the presence of oxygen demanding substances.

LAGOONS #1 AND #2 - WATER

Wastewater samples from Lagoons #1 and #2 had higher alkalinity, conductivity, sulfate, COD and sodium than the uncontaminated surface and groundwaters, but were similar in the other conventional parameters. Lagoon #1 had 0.72 mg/l of chromium, and both lagoons had zinc concentrations slightly above background levels. The other metals were present at concentrations below the detection limits or comparable with non-contaminated samples. Lagoon #1 contained 45 ug/l of xylene and less than 10 ug/l of toluene and 1,1,1-trichloroethane. Lagoon #2 contained no volatile organic compounds, but the base/neutral extract contained a variety of naphthelene derivates and related compounds, typical of dyecarriers, at concentrations up to 340 ug/l.

MISCELLANEOUS WATERS

The non-contact cooling water was almost identical to Bush Pond water, other than temperature. The boiler blowdown had conductivity, alkalinity and dissolved salts typical of blowdown.

SOILS AND SLUDGES

The soil and sludge samples were subjected to a rigorous hot acid/hydrogen peroxide digestion prior to metals analysis. Hence, metal ions normally

present in the soil were dissolved in the sample preparation procedure. Likewise, metal ions incorporated in textile fiber mixed with the soil and sludge were dissolved.

Aluminum and iron were the principal metals in all soil and sludge samples. Traces of silver, arsenic, cadmium and selenium were found in some samples at concentrations which could be expected for uncontaminated soils. Chromium was found in the range of 62 to 1000 mg/kg and most likely originates from chrome-dyed textile fiber. Lead was above the anticipated background level in soil sample SS-1 and Carbonizer lagoon sludge sample SS-5. Zinc concentrations ranged from 110 to 8200 mg/kg. Zinc may derive from the basic dye family or from brass buttons, zippers, etc.

The metal contentrations (except for iron and aluminum) in the Carbonizer lagoon were two to ten times greater in the surface sludge as compared to the samples taken about 6 to 12 inches into the sediments. In contrast, the lower sample layer had slightly higher metal concentrations in Lagoon #1.

Of the four soils and sludges tested for volatile organics, detectable concentrations were found only in SS-4A, the lower sludge layer from Lagoon #1. Toluene, ethylbenzene, xylenes and chlorobenzene were the principal compounds detected. These are all related to dyeing operations.

The base/neutral extractable analyses of the upper and lower sludge/soil layers in Lagoon #1 contained a variety of naphthalene and benzene derivatives at concentrations up to 61,000 ug/kg (61 mg/kg). The compounds are all related to dyeing operations, mostly as dye carriers or impurities in dye carriers.

SEPTIC TANKS

Of the three septic tanks tested for volatile organics, only ST-2 contained any compounds above the detection limit. ST-2 had traces of toluene and xylene. The base/neutral extractable organic analysis of the composite of

the three septic tanks contained a variety of aliphatic and several proteinaceous compounds. A listing of the compounds is included with the complete analytical data in Appendix B. The compounds are typical of what would be expected from human wastes, with the addition of a small amount of paint thinner.

CONCLUSIONS AND RECOMMENDATIONS

In this section, CDM presents its conclusions and recommendations for cleanup of the Buckley & Mann site, based on the laboratory data, visual observations and the history of the site.

Surface and Groundwaters

There was no analytical evidence that the wastewater lagoons or solid wastes on the site have caused any contamination of the Mill River or the Tailrace. CDM found above background COD levels in monitoring well EW-1 adjacent to the Lagoon #1 in previous sampling in 1979 and 1980, so it is likely that the groundwater between Lagoons #1 and #2 and the Tailrace continues to be contaminated with partially treated leachate from the Lagoons. Traces of surfactant found in four wells, including the up-gradient well, in CDM's May 1986 sampling program are not considered significant. Otherwise, there is no evidence that the lagoons or the solid wastes on the site have had any impact on the groundwater.

As there is no longer any wastewater discharged to the lagoons, CDM anticipates that the contaminated groundwaters immediately adjacent to Lagoons #1 and #2 will be further treated by soil microorganisms and diluted by groundwater. Consequently, CDM recommends that B&M take no action in regard to groundwater on the site.

Lagoons #1 and #2 Water

The wastewater in Lagoons #1 and #2 contain dyehouse wastewater that has undergone facultative biological treatment and dilution from rain since the

the three septic tanks contained a variety of aliphatic and several proteinaceous compounds. A listing of the compounds is included wi complete analytical data in Appendix B. The compounds are typical would be expected from human wastes, with the addition of a small a paint thinner.

CONCLUSIONS AND RECOMMENDATIONS

In this section, CDM presents its conclusions and recommendations f cleanup of the Buckley & Mann site, based on the laboratory data, v observations and the history of the site.

Surface and Groundwaters

There was no analytical evidence that the wastewater lagoons or sol wastes on the site have caused any contamination of the Mill River Tailrace. CDM found above background COD levels in monitoring well adjacent to the Lagoon #1 in previous sampling in 1979 and 1980, so likely that the groundwater between Lagoons #1 and #2 and the Tail continues to be contaminated with partially treated leachate from Lagoons. Traces of surfactant found in four wells, including the gradient well, in CDM's May 1986 sampling program are not consider significant. Otherwise, there is no evidence that the lagoons or wastes on the site have had any impact on the groundwater.

As there is no longer any wastewater discharged to the lagoons, CD cipates that the contaminated groundwaters immediately adjacent to #1 and #2 will be further treated by soil microorganisms and dilut groundwater. Consequently, CDM recommends that B&M take no actior regard to groundwater on the site.

Lagoons #1 and #2 Water

The wastewater in Lagoons #1 and #2 contain dyehouse wastewater t undergone facultative biological treatment and dilution from rain

APPENDIX A

BORING LOGS

Camp, Dresser & McKee, Inc. One Center Plaza, Boston, Massachusetts 02108

Soil Boring Log

Well Installation and Completion Data

Client Buckley & Mann Inc. Site Norfolk, MA Job No. 1121-5-RT Surveyed Elevation: Ground _____

Date Drilled 4/21/86 Well No. MW-2 Boring Co. Guild Drilling Co. Top of Casing 175.31 Screen Length 10.0'

Total Depth 16.0' Boring Method Used Hollow Stem Auger Piezometer Casing Size & Type 1.5" Schedule 40 PVC

Field Geologist M. D. Johnson Organic Vapor Instruments Used HN_U Water Table Depth 9.0'

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./ Recov.	Org. Vap. - PPM	Sample Description	Strata. Change	Equipment Installed
						0-0.5' Topsoil Loam		Cement
						Brown fine-course sand and gravel subangular-subrounded		Bentonite Pellets
						4.0'		
5	1	13-25-43	4.0-5.5'	18"/18"	Oppm	Tan fine sand some silt, trace gravel	sand and gravel	
						5.0'		#2 Morry Sand
						9.0'-9.5' Tan fine-medium sand and gravel, trace silt		
10	2	10-8-11	9.0-10.5'	18"/18"	Oppm	9.5'-10.5' Tan fine silty sand	9.5' silty sand	10.0' Sch 40 PVC Screen
	3	17-14-27	14.0-15.5'	18"/18"	Oppm	14.0'-15.0' Tan course angular sand, trace gravel	14.0' sand	
15						15.0'-15.5' Tan fine silt, trace fine sand	15.0' silt	@ 16.0'

Remarks:

Camp, Dresser & McKee, Inc. One Center Plaza, Boston Massachusetts 02108

Soil Boring Log

Well Installation and Completion Data

Client Buckley & Mann Inc. Site Norfolk, MA Job No. 1121-5-RT Surveyed Elevation: Ground ____

Date Drilled 5/22/86 Well No. MW-3 Boring Co. Guild Drilling Co. Top of Casing 164.81 Screen Length 7.5'

Total Depth 10.5' Boring Method Used Hollow Stem Auger Piezometer Casing Size & Type 1.5" Schedule 40 PVC

Field Geologist M. D. Johnson Organic Vapor Instruments Used HNu Water Table Depth 4.0'

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./ Recov.	Org. Vap. - PPM	Sample Description	Strata. Change	Equipment Installed
0						0-0.5' Topsoil (Loam)	sand and gravel	Cement Bentonite Pellets
						Brown fine-course sand and gravel subangular-rounded, little cobbles		
						4.0' Brownish green fine-course sand and fine-medium gravel, angular-subangular, trace silt		#2 Morry Sand
5		25-33-46	4.0-5.5'	18"/18"	1 ppm	5.5'		
								7.5' Sch 40 PVC Screen
						9.0'		
10		27-50/3"	9.0-10.5'	9"/9"	Oppm	Brown-tan fine-course sand, angular-subangular and fine-medium gravel (angular)		@ 10.5'
						10.5'		

Remarks:

Camp, Dresser & McKee, Inc. One Center Plaza, Boston, Massachusetts 02108

Soil Boring Log — Well Installation and Completion Data

Client Buckley & Mann Inc. Site Norfolk, MA Job No. 1121-5-RT Surveyed Elevation: Ground _____

Date Drilled 5/22-23/86 Well No. MW-3A Boring Co. Guild Drilling Co Top of Casing 165.32 Screen Length 10.0'

Total Depth 25'3" Boring Method Used Hollow Stem Auger Piezometer Casing Size & Type 1.5" Schedule 40 PVC

Field Geologist M. D. Johnson Organic Vapor Instruments Used HNu Water Table Depth 4.0"

Depth (feet)	Samp. No.	NX-Core min./ft.	Sample Interval	Adv./ Recov.	Org. Vap. - PPM	Sample Description	Strata. Change	Equipment Installed
						No samples taken See MW-3 Logsheet for unconsolidated statigraphy		
5							sand and gravel	Cement
10		5 min/ft	12'3"-17'3"	60"/60"		12'3"	12'3"	Bentonite Pellets
		5 min/ft 5 min/ft 5 min/ft				Rhyolite-Quartz, Alkali Feldspar minerals, some plagioclase and mafic minerals	Rhyolite	
15		5½ min/ft 5½ min/ft	17'3"-23'3"	60"/60"		14'7" Tightly closed fracture 45° Dip South Same as above		#2 Morry Sand
		5 min/ft 4½ min/ft 5 min/ft				18'4" Fracture 45° Dip East filled with silt 1/8 inch spacing		
20		4 min/ft 5 min/ft	23'3"-25'3"	36"/36"		21.0' Fracture irregular 40-50° Dip Southeast closed spacing Same as above		10.0' Sch 40 PVC Screen
		5½ min/ft 4 min/ft				23'3" Fracture 90° closed spacing		
25						25'3"	25'3"	@ 25'3"

Remarks:

amp, Dresser & McKee, Inc. One Center Plaza, Bost[illegible] Massachusetts 02108

Soil Boring Log

Well Installation and Completion Data

Client Buckley & Mann Inc. Site Norfolk, Inc. Job No. 1121-5-RT Surveyed Elevation: Ground _____

ite Drilled 4/21/86 Well No. MW-4 Boring Co. Guild Drilling Co. Top of Casing 166.55 Screen Length 7.5'

Total Depth 10.5' Boring Method Used Hollow Stem Auger Piezometer Casing Size & Type 1.5" Schedule 40 PVC

Field Geologist M. D. Johnson Organic Vapor Instruments Used HNu Water Table Depth 3.0'

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./ Recov.	Org. Vap. - PPM	Sample Description	Strata. Change	Equipment Installed
						0-0.5' Topsoil (Loam)		Cement Bentonite Pellets
						Brown medium-course sand and gravel, trace cobbles	sand and gravel	
						4.0'	4.0'	#2 Morry Sand
5	1	10-12-11	4.0'-5.5'	18"/18"	Oppm	Tan fine silt, trace-little sand 5.0'	silt 5.0'	
						Tan fine-medium rounded sand 5.5'	sand	
						2" fine silt		
						9.0'	9.0'	7.5' Sch 40 PVC Screen @ 10.5'
10	2	2-5	9.0-10.0'	12"/12"	Oppm	Tan-gray fine silty sand 10.0'	silty sand	

Remarks:

Camp, Dresser & McKee, Inc. One Center Plaza, Boston, Massachusetts 02108

Soil Boring Log

Well Installation and Completion Data

Client Buckley & Mann Inc. Site Norfolk, MA Job No. 1121-5-RT Surveyed Elevation: Ground ____

Date Drilled 4/21/86 Well No. MW-5 Boring Co. Guild Drilling Co. Top of Casing 164.57 Screen Length 7.5'

Total Depth 10.0' Boring Method Used Hollow Stem Auger Piezometer Casing Size & Type 1.5" Schedule 40 PVC

Field Geologist M. D. Johnson Organic Vapor Instruments Used HNU Water Table Depth 3.5'

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./ Recov.	Org. Vap. - PPM	Sample Description	Strata Change	Equipment Installed
						0-0.5' Topsoil (Loam)		Cement
						Tan-brown medium-coarse gravel, some sand, little cobbles	Sand and Gravel	Bentonite Pellets
						4.0'	4.0'	#2 Morry Sand
	1	9-7-6	4.0-5.5'	18"/4"	Oppm	Brown medium-coarse angular sand, little silt	sand	
5						5.5'		
								7.5' Sch 40 PVC Screen
	2	10-14-14	9.0-10.5'	18"/18"	Oppm	9.0'-9.5' Light brown medium-coarse angular sub-angular sand		@ 10.0'
10						9.5-10.5' Fine light brown silt	9.5' silt	
15								

Remarks:

Camp, Dresser & McKee, Inc. One Center Plaza, Boston, Massachusetts 02108

Soil Boring Log

Well Installation and Completion Data

Client Buckley & Mann Inc. Site Norfolk, MA Job No. 1121-5-RT Surveyed Elevation: Ground ____

Date Drilled 4/22/86 Well No. MW-6 Boring Co. Guild Drilling Co. Top of Casing 168.06 Screen Length 7.5'

Total Depth 10.5' Boring Method Used Hollow Stem Auger Piezometer Casing Size & Type 1.5" Schedule 40 PVC

Field Geologist M. D. Johnson Organic Vapor Instruments Used HNu Water Table Depth 3.5'

Depth (feet)	Samp. No.	Blows per 6" 140 lbs.	Sample Interval	Adv./ Recov.	Org. Vap. - PPM	Sample Description	Strata Change	Equipment Installed
						0.-0.5' Topsoil (Loam)		Cement
						Brown fine silty sand, trace clay	silty sand	Bentonite Pellets
						4.0'	4.0'	
5	1	20-42-54	4.0-5.5'	18"/12"	0.5 ppm	Brown fine-coarse sand and gravel subrounded, trace silt	sand and gravel	#2 Morry Sand
						5.5'		
								7.5' Sch 40 PVC Screen @ 10.5'
						9.0'	9.0'	
10	2	6-8-14	9.0-10.5	18"/18"	0ppm	Green-gray fine silt, some fine sand rounded	sandy silt	
						10.5'		

Remarks:

APPENDIX B

COMPLETE ANALYTICAL RESULTS

CAMP DRESSER & McKEE CLIENT _____ JOB NO. _____ COMPUTED BY _____

PROJECT _____ DATE CHECKED _____ DATE _____

DETAIL _____ CHECKED BY _____ PAGE NO _____

KEY TO SAMPLE IDENTIFICATION

SAMPLE LOCATION	SAMPLE ID #	CDM LAB. # 186 - -	CAA LAB. #	Composite Lab. # 849 - -
BUSH POND	SW-6	13	06	
TAILRACE HEAD	SW-1	15	15	17
COOLING WATER	SW-7	16		
MILL RIVER BELOW JUNCTION	SW-5	08	02	
LAGOON #1	SW-4	09	03	
LAGOON #2	SW-3	22	13	21
UPGRADIENT WATER TABLE WELL	MW-2	21	12	20
BEDROCK WELL at 25 LAWRENCE ST.	GW-1	12	05	15
BED ROCK WELL at B+M	GW-2	17	08	18
DUG WELL AT B+M	GW-3	07	01	11
WATER TABLE WELL N. of LAGOON #2	MW-3	14	07	16
BEDROCK WELL N. of " #2	MW-3A	11	04	14
EXISTING WELL E. of " #1	EW-1	31		
" " NE of " #2	EW-2	32		
" " #3	EW-3	33		
WATER TABLE WELL NEAR OLD DISPOSAL AREA	MW-4	18	09	
" " " BETWEEN RIVER + CAR.	MW-5	19	10	19
" " " NEAR CARBONIZER L.	MW-6	20	11	
SOIL NEAR OLD DISPOSAL AREA	SS-1	24	19	
SOIL LAGOON #1 SLUDGE PILE	SS-2		22	
SLUDGE CORE LAGOON #1 TOP	SS-4	27	20	10
" " " BOTTOM	SS-4A	28	16	07
" " " #2 TOP	SS-3		21	
" " CARBONIZER LAGOON TOP	SS-5	25	17	
" " " " BOTTOM	SS-5A	26	18	
SEPTIC TANK #1	ST-1	28		
" #2	ST-2	29		
" #3	ST-3	30		
" COMPOSITE	ST-C	30A		22
BOILER BLOWDOWN	SW-2	186:0	14	

CDM
environmental engineers, scientists,
planners, & management consultants

CAMP DRESSER & McKEE INC.

One Center Plaza
Boston, Massachusetts 02108
617 742-5151

TASK NO: 86050802
FILE NO: 9956-182
LAB NOS: 18607-33

11 JUNE 1986

CERTIFICATE OF LABORATORY ANALYSIS

PROJECT: BUCKLEY & MANN

REPORT TO: ROBERT A. DANGEL
CDM/BOSTON
RE: 1121-5-RT-GEAD

DATE SAMPLES RECEIVED: 8 MAY 1986

DATE SAMPLES COLLECTED: 7 MAY 1986 BY A.MICHELINI, R.DANGEL/CDM

ANALYTICAL METHODS: METHOD 624, PURGEABLES, METHODS FOR ORGANIC CHEMICAL ANALYSIS OF MUNICIPAL AND INDUSTRIAL WASTEWATER, EPA-600/4-82-057, JULY 1982.

BASE NEUTRALS + LIBRARY SEARCH ANALYSIS CONDUCTED BY COMPUCHEM LABORATORIES, RESEARCH TRIANGLE PARK, NC IN ACCORDANCE WITH APPROVED EPA METHODOLOGY.

ALL OTHER PARAMETERS - STANDARD METHODS FOR THE EXAMINATION OF WATER & WASTEWATER, 16TH ED., 1985, AND/OR BY THE US EPA MANUAL OF METHODS FOR CHEMICAL ANALYSIS OF WATER & WASTES, MARCH 1983.

ANALYTICAL RESULTS: AS ON ATTACHED TABLES. COMPUCHEM RESULTS AS ON ATTACHED REPORTS.

Peter T. Maynard 6/12/86
PETER T. MAYNARD DATE
SENIOR INORGANICS CHEMIST

James F. Occhialini 6/12/86
JAMES F. OCCHIALINI DATE
LABORATORY SUPERVISOR

PTM,JFO/EK

ANALYTICAL RESULTS

CDM LAB NO.	SAMPLE DESCRIPTION	ALKALINITY, TOTAL, MG/L AS $CaCO_3$	CHEMICAL OXYGEN DEMAND, MG/L
18607	GW-3	13.	X
18608	SW-5	28.	X
18609	SW-4	270.	440.
18610	SW-2	320.	X
18611	MW-3A	32.	<10.
18612	GW-1	110.	X
18613	SW-6	18.	X
18614	MW-3	18.	<10.
18615	SW-1	35.	X
18616	SW-7	19.	X
18617	GW-2	68.	X
18618	MW-4	17.	<10.
18619	MW-5	24.	<10.
18620	MW-6	25.	40.
18621	MW-2	17.	50.
18622	SW-3	130.	360.
18631	EW-1	X	<10.
18632	EW-2	X	<10.
18633	EW-3	X	140.

X - ANALYSIS NOT REQUESTED

EPA METHOD 300

- ALL CONCENTRATIONS IN MG/L -

SAMPLE DESCRIPTION:	GW-3	SW-5	SW-4	SW-2	MW-3A	GW-1	SW-6	MW-3
COM LAB NO:	18607	18608	18609	18610	18611	18612	18613	18614
ANION:								
FLUORIDE	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
CHLORIDE	68.	30.	22.	75.	12.	<0.5	27.	14.
NITRITE-N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ORTHO-P	<1.0	<1.0	2.8	3.6	<1.0	<1.0	<1.0	<1.0
BROMIDE	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
NITRATE-N	7.2	<0.5	<0.5	0.6	8.2	<0.5	<0.5	0.8
SULPHATE	10.	11.	170.	240.	10.	5.0	12.	9.8

ANALYTICAL NOTES:

CHROMATOGRAPHIC CONDITIONS:

UNIT:	DIONEX 2000i
ANION COLUMN:	DIONEX HPIC-AS4A
GUARD COLUMN:	DIONEX HPIC-AS6A
DETECTOR:	CONDUCTIVITY
ELUENT:	0.75 mM $NaHCO_3$/2.2 mM Na_2CO_3
RANGE:	100 US
PUMP VOLUME:	2.0 ML/MIN.
SAMPLE LOOP:	100 µL (APPROX.)

EPA METHOD 300

- ALL CONCENTRATIONS IN MG/L -

SAMPLE DESCRIPTION:	SW-1	SW-7	GW-2	MW-4	MW-5	MW-6	MW-2	SW-3
CDM LAB NO:	18615	18616	18617	18618	18619	18620	18621	18622
ANION:								
FLUORIDE	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CHLORIDE	36.	44.	21.	7.8	14.	24.	7.4	14.
NITRITE-N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ORTHO-P	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.4
BROMIDE	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
NITRATE-N	<0.5	<0.5	2.3	1.6	0.7	<0.5	0.9	<0.5
SULPHATE	8.3	12.	14.	11.	9.4	9.7	10.	74.

ANALYTICAL NOTES:

CHROMATOGRAPHIC CONDITIONS:

UNIT:	DIONEX 2000i
ANION COLUMN:	DIONEX HPIC-AS4A
GUARD COLUMN:	DIONEX HPIC-ASGA
DETECTOR:	CONDUCTIVITY
ELUENT:	0.75 MM $NAHCO_3$/2.2 MM NA_2CO_3
RANGE:	100 US
PUMP VOLUME:	2.0 ML/MIN.
SAMPLE LOOP:	100 µL (APPROX.)

CODES
ND - NOT DETECTED
P - PRESENT

VOLATILE ORGANICS

- ALL VALUES REPORTED AS µG/L -

SAMPLE DESCRIPTION:	GW-3	SW-5	SW-4	MW-3A	GW-1
CDM LAB NO:	18607	18608	18609	18611	18612
CHLOROMETHANE	ND	ND	ND	ND	ND
BROMOMETHANE					
VINYL CHLORIDE					
CHLOROETHANE					
METHYLENE CHLORIDE					
TRICHLOROFLUOROMETHANE					
1,1-DICHLOROETHYLENE					
1,1-DICHLOROETHANE					
TRANS-1,2-DICHLOROETHYLENE					
CHLOROFORM					
1,2-DICHLOROETHANE			↓		
1,1,1-TRICHLOROETHANE			P		
CARBON TETRACHLORIDE			ND		
BROMODICHLOROMETHANE			↓		
1,2-DICHLOROPROPANE					
TRANS-1,3-DICHLOROPROPENE					
TRICHLOROETHYLENE					
DIBROMOCHLOROMETHANE					
CIS-1,3-DICHLOROPROPENE					
1,1,2-TRICHLOROETHANE					
BENZENE					
2-CHLOROETHYLVINYLETHER					
BROMOFORM					
1,1,2,2-TETRACHLOROETHYLENE					
1,1,2,2-TETRACHLOROETHANE			↓		
TOLUENE			P		
CHLOROBENZENE			ND		
ETHYLBENZENE	↓	↓	P	↓	↓
XYLENES	ND	ND	45.	ND	ND
ACETONE	ND	ND	ND	ND	ND
% SURROGATE RECOVERY:					
D6 BENZENE	110	100	90	97	97
D8 TOLUENE	120	115	86	100	100

ND - NOT DETECTED @ DETECTION LIMIT OF 10 UG/L

P - PRESENT, BUT BELOW METHOD DETECTION LIMIT

VOLATILE ORGANICS

- ALL VALUES REPORTED AS µG/L -

CODES
ND - NOT DETECTED
P - PRESENT

SAMPLE DESCRIPTION:	SW-6	MW-3	SW-1	GW-2	MW-4
CDM LAB NO:	18613	18614	18615	18617	18618
CHLOROMETHANE	ND	ND	ND	ND	ND
BROMOMETHANE					
VINYL CHLORIDE					
CHLOROETHANE					
METHYLENE CHLORIDE					
TRICHLOROFLUOROMETHANE					
1,1-DICHLOROETHYLENE					
1,1-DICHLOROETHANE					
TRANS-1,2-DICHLOROETHYLENE					
CHLOROFORM					
1,2-DICHLOROETHANE					
1,1,1-TRICHLOROETHANE					
CARBON TETRACHLORIDE					
BROMODICHLOROMETHANE					
1,2-DICHLOROPROPANE					
TRANS-1,3-DICHLOROPROPENE					
TRICHLOROETHYLENE					
DIBROMOCHLOROMETHANE					
CIS-1,3-DICHLOROPROPENE					
1,1,2-TRICHLOROETHANE					
BENZENE					
2-CHLOROETHYLVINYLETHER					
BROMOFORM					
1,1,2,2-TETRACHLOROETHYLENE					
1,1,2,2-TETRACHLOROETHANE					
TOLUENE					
CHLOROBENZENE					
ETHYLBENZENE	↓	↓	↓	↓	↓
XYLENES	ND	ND	ND	ND	ND
ACETONE	ND	ND	ND	ND	ND
% SURROGATE RECOVERY:					
D6 BENZENE	110	100	100	100	100
D8 TOLUENE	110	110	96	100	100

ND - NOT DETECTED @ DETECTION LIMIT OF 10 UG/L

P - PRESENT, BUT BELOW METHOD DETECTION LIMIT

CODES
ND - NOT DETECTED
P - PRESENT

VOLATILE ORGANICS

- ALL VALUES REPORTED AS µG/L -
*UG/KG

SAMPLE DESCRIPTION:	MW-5	MW-6	MW-2	SW-3	SS-4A*
CDM LAB NO:	18619	18620	18621	18622	18623
CHLOROMETHANE	ND	ND	ND	ND	ND
BROMOMETHANE	↓	↓	↓	↓	↓
VINYL CHLORIDE					
CHLOROETHANE					
METHYLENE CHLORIDE					
TRICHLOROFLUOROMETHANE					
1,1-DICHLOROETHYLENE					
1,1-DICHLOROETHANE					
TRANS-1,2-DICHLOROETHYLENE					
CHLOROFORM					
1,2-DICHLOROETHANE					
1,1,1-TRICHLOROETHANE					
CARBON TETRACHLORIDE					
BROMODICHLOROMETHANE					
1,2-DICHLOROPROPANE					
TRANS-1,3-DICHLOROPROPENE					↓
TRICHLOROETHYLENE					45.
DIBROMOCHLOROMETHANE					ND
CIS-1,3-DICHLOROPROPENE					ND
1,1,2-TRICHLOROETHANE					ND
BENZENE					P
2-CHLOROETHYL VINYLETHER					ND
BROMOFORM					ND
1,1,2,2-TETRACHLOROETHYLENE					P
1,1,2,2-TETRACHLOROETHANE					ND
TOLUENE					150.
CHLOROBENZENE					1100.
ETHYLBENZENE	↓	↓	↓	↓	860.
XYLENES	ND	ND	ND	ND	2100.
ACETONE	ND	ND	ND	ND	ND
% SURROGATE RECOVERY:					
D6 BENZENE	96	100	110	93	93
D8 TOLUENE	92	100	93	96	83

ND - NOT DETECTED @ DETECTION LIMIT OF 10 UG/L

P - PRESENT, BUT BELOW METHOD DETECTION LIMIT

*ND - NOT DETECTED @ DETECTION LIMIT OF 45 UG/KG

CODES
ND - NOT DETECTED
P - PRESENT

VOLATILE ORGANICS

- ALL VALUES REPORTED AS µG/L -

*UG/KG

SAMPLE DESCRIPTION:	SS-1*	SS-5*	SS-5A*	ST-1	ST-2	ST-3
CDM LAB NO:	18624	18625	18626	18628	18629	18630
CHLOROMETHANE	ND	ND	ND	ND	ND	ND
BROMOMETHANE						
VINYL CHLORIDE						
CHLOROETHANE						
METHYLENE CHLORIDE						
TRICHLOROFLUOROMETHANE						
1,1-DICHLOROETHYLENE						
1,1-DICHLOROETHANE						
TRANS-1,2-DICHLOROETHYLENE						
CHLOROFORM						
1,2-DICHLOROETHANE						
1,1,1-TRICHLOROETHANE						
CARBON TETRACHLORIDE						
BROMODICHLOROMETHANE						
1,2-DICHLOROPROPANE						
TRANS-1,3-DICHLOROPROPENE						
TRICHLOROETHYLENE						
DIBROMOCHLOROMETHANE						
CIS-1,3-DICHLOROPROPENE						
1,1,2-TRICHLOROETHANE						
BENZENE						
2-CHLOROETHYLVINYLETHER						
BROMOFORM						
1,1,2,2-TETRACHLOROETHYLENE						
1,1,2,2-TETRACHLOROETHANE					↓	
TOLUENE					91.	
CHLOROBENZENE					ND	
ETHYLBENZENE	↓	↓	↓	↓	ND	↓
XYLENES	ND	ND	ND	ND	20.	ND
ACETONE	ND	ND	ND	ND	ND	ND
% SURROGATE RECOVERY:						
D6 BENZENE	87	93	90	115	100	93
D8 TOLUENE	85	69	81	82	92	100

ND - NOT DETECTED @ DETECTION LIMIT OF 10 UG/L

P - PRESENT, BUT BELOW METHOD DETECTION LIMIT

*ND - NOT DETECTED @ DETECTION LIMIT OF 25 UG/KG

R E P O R T T O

Camp, Dresser & McKee, Inc.
One Center Plaza
Boston, MA 02108

Attn: Mr. Robert Dangel

Work ID: 1121-5-RT-GEAD (Buckley)
P.O. No.: 36710
Work Order: 86-05-056

Cambridge Analytical Associates
1106 Commonwealth Avenue / Boston, Massachusetts 02215 / (617) 232-2207

Received: 05/08/86

REPORT
06/16/86 08:52:47

Work Order # 86-05-056

REPORT TO: Camp, Dresser & McKee, Inc.
One Center Plaza
Boston, MA 02108

ATTEN: Mr Robert Dangel

CLIENT: CDM_BOSTON SAMPLES: 22
COMPANY: Camp, Dresser & McKee, Inc.
FACILITY: One Center Plaza
Boston, MA 02108

WORK ID: 1121-5-RT-GEAD (Buckley)
TAKEN: By Client
TRANS: By Client
TYPE: Aqueous & Sludge
P.O. #: 36710
INVOICE: under separate cover

PREPARED BY: Cambridge Analytical Assoc.
Environmental Division
1106 Commonwealth Avenue
Boston, MA 02215

ATTEN:
PHONE: 617-232-2207

Edward A. Lawler
CERTIFIED BY

CONTACT LAWLER

This report is approved for release by the following staff:
Laboratory Director:
Inorganic Laboratory:
Organic Laboratory:

SAMPLE IDENTIFICATION

01	GW-3
02	SW-5
03	SW-4
04	MW-3A
05	GW-1
06	SW-6
07	MW-3
08	GW-2
09	MW-4
10	MW-5
11	MW-6
12	MW-2
13	SW-3
14	SW-2
15	SW-1
16	Ss-4A
17	SS-5
18	SS-5A
19	SS-1
20	SS-4

TEST CODES and NAMES used on this report

AG_I_A	Silver (Ag)-ICP
AG_I_S	Silver (Ag)-ICP
AL_I_A	Aluminum (Al)-ICP
AL_I_S	Aluminum (Al)-ICP
AS_GFA	Arsenic (As)-furnace AAS
AS_I_A	Arsenic (As)-ICP
AS_I_S	Arsenic (As)-ICP
CD_GFA	Cadmium (Cd)-furnace AAS
CD_GFS	Cadmium (Cd)-furnace AAS
CR_I_A	Chromium (Cr)-ICP
CR_I_S	Chromium (Cr)-ICP
DIGSOL	Acid digestion-soil-SW846
DIG_AQ	Acid digestion-aqueous-EPA
FE_I_A	Iron (Fe)-ICP
FE_I_S	Iron (Fe)-ICP
HG_CVA	Mercury (Hg)-cold vapor
NA_I_A	Sodium (Na)-ICP
NA_I_S	Sodium (Na)-ICP
PB_GFA	Lead (Pb)-furnace AAS
PB_GFS	Lead (Pb)-furnace AAS
SE_GFA	Selenium (Se)-furnace
SE_GFS	Selenium (Se)-furnace
ZN_I_A	Zinc (Zn)-ICP
ZN_I_S	Zinc (Zn)-ICP

	SAMPLE IDENTIFICATION
21	SS-3
22	SS-2

Received: 05/08/86

REPORT
Results By Test

Work Order # 86-05-056

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
AG_I_A mg/l	<0.01	<0.01	<0.01	<0.01	<0.01
AL_I_A mg/l	0.11	<0.1	0.61	<0.1	<0.1
AS_GFA mg/l	<0.016	<0.016	<0.016	<0.016	<0.016
CD_GFA mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
CR_I_A mg/l	<0.025	<0.025	0.72	<0.025	<0.025
DIG_AQ date complete	05/29/86	05/29/86	05/29/86	05/29/86	05/29/86
FE_I_A mg/l	0.13	0.16	0.76	<0.025	0.44
NA_I_A mg/l	31	21	180	8.3	14
PB_GFA mg/l	0.005	<0.003	0.03	<0.003	0.004
SE_GFA mg/l	<0.003	<0.003	<0.003	<0.003	<0.003
ZN_I_A mg/l	<0.02	<0.02	0.23	<0.02	0.02

TEST CODE default units	Sample 06 (entered units)	Sample 07 (entered units)	Sample 08 (entered units)	Sample 09 (entered units)	Sample 10 (entered units)
AG_I_A mg/l	<0.01	<0.01	<0.01	<0.01	<0.01
AL_I_A mg/l	0.13	0.15	0.22	0.12	0.31
AS_GFA mg/l	<0.016	<0.016	<0.016	<0.016	<0.016
CD_GFA mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
CR_I_A mg/l	<0.025	<0.025	<0.025	<0.025	<0.025

REPORT
Results By Test

TEST CODE default units	Sample 11 (entered units)	Sample 12 (entered units)	Sample 13 (entered units)	Sample 14 (entered units)	Sample 15 (entered units)
DIG_AQ date complete	05/29/86	05/29/86	05/29/86	05/29/86	05/29/8
FE_I_A mg/l	0.13	<0.025	<0.025	0.11	0.9
NA_I_A mg/l	20	9.5	21	6.1	9.1
PB_GFA mg/l	<0.003	<0.003	0.006	0.007	<0.003
SE_GFA mg/l	<0.003	<0.003	<0.003	<0.003	<0.003
ZN_I_A mg/l	<0.02	0.03	<0.02	<0.02	<0.02

TEST CODE default units	Sample 11 (entered units)	Sample 12 (entered units)	Sample 13 (entered units)	Sample 14 (entered units)	Sample 15 (entered units)
AG_I_A mg/l	<0.01	<0.01	<0.01		<0.01
AL_I_A mg/l	0.32	0.21	0.27		0.29
AS_GFA mg/l	<0.016	<0.016	<0.016		
AS_I_A mg/l					<0.016
CD_GFA mg/l	<0.001	<0.001	<0.001		<0.001
CR_I_A mg/l	<0.025	<0.025	0.09		<0.025
DIG_AQ date complete	05/29/86	05/29/86	05/29/86	05/29/86	05/29/86
FE_I_A mg/l	1.9	<0.025	2.1	4.5	2.8
HG_CVA mg/l					<0.0004
NA_I_A mg/l	18	8.1	73	260	20
PB_GFA mg/l	0.003	<0.003	0.009		0.004
SE_GFA mg/l	<0.003	<0.003	<0.003		<0.003

ZN_I_A mg/l	<0.02	<0.02	0.10	<0.02

TEST CODE default units	Sample 16 (entered units)	Sample 17 (entered units)	Sample 18 (entered units)	Sample 19 (entered units)	Sample 20 (entered units)
AG_I_S ug/g (dry wt)	<1.0 ug/g (dry wt	5.7	<1.0	16	<1.0
AL_I_S ug/g (dry wt)	5900	6700	13000	27000	7600
AS_I_S ug/g (dry wt)	2.9	4.7	2.7	21	2.1
CD_GFS ug/g (dry wt)	<3.8	18	2.9	28	<2.5
CR_I_S ug/g (dry wt)	1300	450	62	1000	27?
DIGSOL date complete	05/23/86	05/23/86	05/23/86	05/23/86	05/23/86
FE_I_S ug/g (dry wt)	8400	7600	5800	110000	10000
NA_I_S ug/g (dry wt)	850	200	96	1300	250
PB_GFS ug/g (dry wt)	19	670	88	1200	12
SE_GFS ug/g (dry wt)	0.57	0.97	0.44	0.35	<0.19
ZN_I_S ug/g (dry wt)	4600	920	260	8200	930

TEST CODE default units	Sample 21 (entered units)	Sample 22 (entered units)
AG_I_S ug/g (dry wt)	<1.0	<1.0
AL_I_S ug/g (dry wt)	5900	11000
AS_I_S ug/g (dry wt)	1.3	12

REPORT
Results By Test

CD_GFS ug/g (dry wt)	<2.8	<2.5
CR_I_S ug/g (dry wt)	430	2100
DIGSOL date complete	05/23/86	05/23/86
FE_I_S ug/g (dry wt)	7700	13000
NA_I_S ug/g (dry wt)	310	97
PB_GFS ug/g (dry wt)	12	38
SE_GFS ug/g (dry wt)	<0.21	0.50
ZN_I_S ug/g (dry wt)	230	110

COMPUCHEM
LABORATORIES

ANALYTICAL REPORT OF DATA
SUBMITTED TO:

Ms. Eileen Kireilis
Camp, Dresser, and McKee
One Center Plaza
Boston, MA 02108

METHOD REFERENCE

CompuChem® employs Method 625 for GC/MS analysis of base/neutral organics in liquid matrices. This method is published in Volume 49, October 26, 1984 Federal Register.

METHOD SUMMARY

As stated in the October 1984 reference, "A measured volume of sample, approximately one-liter, is serially extracted with methylene chloride at a pH greater than 11 and again at pH less than 2 using a separatory funnel or a continuous extractor. The methylene chloride extract is dried and concentrated to a volume of 1 ml."

"Qualitative identification is performed using the retention time and the relative abundance of three characteristic ions. Quantitative analysis is performed using either external or internal standard techniques."

Semi-quantitative analysis (library search) is performed by automatic comparison of the unknown peak spectrum to the National Bureau of Standards (NBS) mass spectral library. Estimated concentration is calculated using the known concentration and peak area of the closest internal standard while assuming a response factor of one for the unknown compound.

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18615
COMPUCHEM® SAMPLE NUMBER: 84917

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
8B.	HEXACHLOROETHANE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
24B.	FLUORENE	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 18615
COMPUCHEM® SAMPLE NUMBER: 84917

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	BDL	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	PYRENE	BDL	10
34B.	BENZIDINE	BDL	50
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	3,3'-DICHLOROBENZIDINE	BDL	20
37B.	BENZO(A)ANTHRACENE	BDL	10
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
39B.	CHRYSENE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	75	(41-120)
2-Fluorobiphenyl	*75*	*(44-119)*
D_{14}-Terphenyl	122	(33-128)
D_{10}-Pyrene*	119	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range

SAMPLE IDENTIFIER: 18615
COMPUCHEM® SAMPLE NUMBER: 84917

15 PEAK IDENTIFICATION - Base/Neutral

Exclusive of any priority pollutants (specific to this analysis), surrogate standard, and internal standard peaks, no compounds greater than 10% of the closest internal standard were tentatively identified by mass spectral library search.

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18621
COMPUCHEM® SAMPLE NUMBER: 84920

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
8B.	HEXACHLOROETHANE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
24B.	FLUORENE	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES - (Page Two)

SAMPLE IDENTIFIER: 18621
COMPUCHEM® SAMPLE NUMBER: 84920

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	BDL	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	PYRENE	BDL	10
34B.	BENZIDINE	BDL	50
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	3,3'-DICHLOROBENZIDINE	BDL	20
37B.	BENZO(A)ANTHRACENE	BDL	10
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
39B.	CHRYSENE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	83	(41-120)
2-Fluorobiphenyl	79	(44-119)
D_{14}-Terphenyl	110	(33-128)
D_{10}-Pyrene*	109	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range.

COMPUCHEM ORGANICS ANALYSIS DATA SHEET

DATA FILENAME: BC084920C21

LIBRARY SEARCH RESULTS OF EXTRANEOUS PEAKS &
ESTIMATED CONCENTRATION OF TENTATIVELY IDENTIFIED COMPOUNDS
ANALYTICAL FRACTION: BASE1

SAMPLE # 84920

ITEM	SCAN NUMBER	CAS #	COMPOUND NAME	% PURITY	ASSESSMENT* RS	OI	UK	ESTIMATED CONC. IN UG L	UG KG	UG ML	UG G
1	929	42498-32-8	BENZAMIDE,N-(1,1-DIMETHYLETHYL)-4-METHYL-	74.4	☐	☒	☐	☒	☐	☐	☐
								6.			
	1.000	40.00									

SPECTROSCOPIST [signature]

DATE 5/14/86

(*) RS - REASONABLE IDENTIFICATION, RETENTION TIME COMPATIBILITY
OI - ISOMER OR SIMILAR COMPOUND
UK - UNKNOWN, NOT IN NBS LIBRARY

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18612
COMPUCHEM® SAMPLE NUMBER: 84915

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
8B.	HEXACHLOROETHANE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
24B.	FLUORENE	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES (Page Two)

SAMPLE IDENTIFIER: 18612
COMPUCHEM® SAMPLE NUMBER: 84915

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	BDL	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	PYRENE	BDL	10
34B.	BENZIDINE	BDL	50
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	3,3'-DICHLOROBENZIDINE	BDL	20
37B.	BENZO(A)ANTHRACENE	BDL	10
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
39B.	CHRYSENE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	78	(41-120)
2-Fluorobiphenyl	79	(44-119)
D_{14}-Terphenyl	118	(33-128)
D_{10}-Pyrene*	116	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range

SAMPLE IDENTIFIER: 18612
COMPUCHEM® SAMPLE NUMBER: 84915

15 PEAK IDENTIFICATION - Base/Neutral

Exclusive of any priority pollutants (specific to this analysis), surrogate standard, and internal standard peaks, no compounds greater than 10% of the closest internal standard were tentatively identified by mass spectral library search.

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18617
COMPUCHEM® SAMPLE NUMBER: 84918

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
8B.	HEXACHLOROETHANE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
24B.	FLUORENE	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES - (Page Two)

SAMPLE IDENTIFIER: 18617
COMPUCHEM® SAMPLE NUMBER: 84918

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	BDL	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	PYRENE	BDL	10
34B.	BENZIDINE	BDL	50
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	3,3'-DICHLOROBENZIDINE	BDL	20
37B.	BENZO(A)ANTHRACENE	BDL	10
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
39B.	CHRYSENE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	85	(41-120)
2-Fluorobiphenyl	83	(44-119)
D_{14}-Terphenyl	116	(33-128)
D_{10}-Pyrene*	116	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range.

SAMPLE IDENTIFIER: 18617
COMPUCHEM® SAMPLE NUMBER: 84918

15 PEAK IDENTIFICATION - Base/Neutral

Exclusive of any priority pollutants (specific to this analysis), surrogate standard, and internal standard peaks, no compounds greater than 10% of the closest internal standard were tentatively identified by mass spectral library search.

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18607
COMPUCHEM® SAMPLE NUMBER: 84911

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
8B.	HEXACHLOROETHANE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
24B.	FLUORENE	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES (Page Two)

SAMPLE IDENTIFIER: 18607
COMPUCHEM® SAMPLE NUMBER: 84911

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	BDL	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	PYRENE	BDL	10
34B.	BENZIDINE	BDL	50
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	3,3'-DICHLOROBENZIDINE	BDL	20
37B.	BENZO(A)ANTHRACENE	BDL	10
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
39B.	CHRYSENE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	78	(41-120)
2-Fluorobiphenyl	74	(44-119)
D_{14}-Terphenyl	111	(33-128)
D_{10}-Pyrene*	112	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range.

SAMPLE IDENTIFIER: 18607
COMPUCHEM® SAMPLE NUMBER: 84911

15 PEAK IDENTIFICATION - Base/Neutral

Exclusive of any priority pollutants (specific to this analysis), surrogate standard, and internal standard peaks, no compounds greater than 10% of the closest internal standard were tentatively identified by mass spectral library search.

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES --

SAMPLE IDENTIFIER: 18614
COMPUCHEM® SAMPLE NUMBER: 84916

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
8B.	HEXACHLOROETHANE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
24B.	FLUORENE	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 18614
COMPUCHEM® SAMPLE NUMBER: 84916

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	BDL	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	PYRENE	BDL	10
34B.	BENZIDINE	BDL	50
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	3,3'-DICHLOROBENZIDINE	BDL	20
37B.	BENZO(A)ANTHRACENE	BDL	10
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
39B.	CHRYSENE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	78	(41-120)
2-Fluorobiphenyl	78	(44-119)
D_{14}-Terphenyl	119	(33-128)
D_{10}-Pyrene*	115	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range.

DATA FILENAME: BC084916C21

COMPUCHEM ORGANICS ANALYSIS DATA SHEET
LIBRARY SEARCH RESULTS OF EXTRANEOUS PEAKS &
ESTIMATED CONCENTRATION OF TENTATIVELY IDENTIFIED COMPOUNDS
ANALYTICAL FRACTION: BASE1

SAMPLE # 84916

ITEM	SCAN NUMBER	CAS #	COMPOUND NAME	% PURITY	ASSESSMENT* RS	OI	UK	ESTIMATED CONC. IN UG PER L ☑	KG ☐	ML ☐	G ☐
1	1034	3622-84-2	BENZENESULFONAMIDE,N-BUTYL-	92.7	☐	☒	☐		32.		

1.000 ~~40.00~~

SPECTROSCOPIST [signature]

DATE 5/14/86

(*) RS - REASONABLE IDENTIFICATION, RETENTION TIME COMPATIBILITY
OI - ISOMER OR SIMILAR COMPOUND
UK - UNKNOWN, NOT IN NBS LIBRARY

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES --

SAMPLE IDENTIFIER: 18611
COMPUCHEM® SAMPLE NUMBER: 84914

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
8B.	HEXACHLOROETHANE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
24B.	FLUORENE	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 18611
COMPUCHEM® SAMPLE NUMBER: 84914

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	BDL	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	PYRENE	BDL	10
34B.	BENZIDINE	BDL	50
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	3,3'-DICHLOROBENZIDINE	BDL	20
37B.	BENZO(A)ANTHRACENE	BDL	10
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
39B.	CHRYSENE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	75	(41-120)
2-Fluorobiphenyl	76	(44-119)
D_{14}-Terphenyl	108	(33-128)
D_{10}-Pyrene*	111	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range

COMPUCHEM ORGANICS ANALYSIS DATA SHEET
LIBRARY SEARCH RESULTS OF EXTRANEOUS PEAKS &
ESTIMATED CONCENTRATION OF TENTATIVELY IDENTIFIED COMPOUNDS
ANALYTICAL FRACTION: Base/Neutral

DATA FILENAME: BC084914C21 SAMPLE # 84914

ITEM	SCAN NUMBER	CAS #	COMPOUND NAME	% PURITY	ASSESSMENT* RS	OI	UK	ESTIMATED CONC.(ug/l)
1	1034	3622-84-2	Benzenesulfonamide, N-Butyl-	93.8		x		11
	1.000	40.00						

SPECTROSCOPIST EB

DATE 5/14/86

(*) RS - REASONABLE IDENTIFICATION, RETENTION TIME COMPATIBILITY
OI - ISOMER OR SIMILAR COMPOUND
UK - UNKNOWN, NOT IN NBS LIBRARY

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18619
COMPUCHEM® SAMPLE NUMBER: 84919

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	HEXACHLOROETHANE	BDL	10
8B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	FLUORENE	BDL	10
24B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES (Page Two)

SAMPLE IDENTIFIER: 18619
COMPUCHEM® SAMPLE NUMBER: 84919

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	BDL	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	BENZIDINE	BDL	50
34B.	PYRENE	BDL	10
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	BENZO(A)ANTHRACENE	BDL	10
37B.	3,3'-DICHLOROBENZIDINE	BDL	20
38B.	CHRYSENE	BDL	10
39B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
d_5-Nitrobenzene	76	(41-120)
2-Fluorobiphenyl	69	(44-119)
d_{14}-Terphenyl	115	(33-128)
d_{10}-Pyrene	106	(40-130)

BDL=BELOW DETECTION LIMIT

DATA FILENAME: BR084919C21

COMPUCHEM ORGANICS ANALYSIS DATA SHEET
LIBRARY SEARCH RESULTS OF EXTRANEOUS PEAKS &
ESTIMATED CONCENTRATION OF TENTATIVELY IDENTIFIED COMPOUNDS
ANALYTICAL FRACTION: BASE1

SAMPLE # 84919

ITEM	SCAN NUMBER	CAS #	COMPOUND NAME	% PURITY	ASSESSMENT* RS	OI	UK	ESTIMATED CONC. IN UG PER L	KG	ML	G
1	924	42498-32-8	BENZAMIDE,N-(1,1-DIMETHYLETHYL)-4-METHYL-	73.1	☐	☑	☐	☑	☐	☐	☐
	1.000	40.00						27.			

SPECTROSCOPIST [signature]

DATE 5/19/86

(*) RS - REASONABLE IDENTIFICATION, RETENTION TIME COMPATIBILITY
OI - ISOMER OR SIMILAR COMPOUND
UK - UNKNOWN, NOT IN NBS LIBRARY

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18622
COMPUCHEM® SAMPLE NUMBER: 84921

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	BDL	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	HEXACHLOROETHANE	22	10
8B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	50	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	73	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	FLUORENE	47	10
24B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: 18622
COMPUCHEM® SAMPLE NUMBER: 84921

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
29B.	PHENANTHRENE	33	10
30B.	ANTHRACENE	BDL	10
31B.	DI-N-BUTYLPHTHALATE	BDL	10
32B.	FLUORANTHENE	BDL	10
33B.	PYRENE	BDL	10
34B.	BENZIDINE	BDL	50
35B.	BUTYLBENZYLPHTHALATE	BDL	10
36B.	3,3'-DICHLOROBENZIDINE	BDL	20
37B.	BENZO(A)ANTHRACENE	BDL	10
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	10
39B.	CHRYSENE	BDL	10
40B.	DI-N-OCTYLPHTHALATE	BDL	10
41B.	BENZO(B)FLUORANTHENE	BDL	10
42B.	BENZO(K)FLUORANTHENE	BDL	10
43B.	BENZO(A)PYRENE	BDL	10
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	10
45B.	DIBENZO(A,H)ANTHRACENE	BDL	10
46B.	BENZO(G,H,I)PERYLENE	BDL	10

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	67	(41-120)
2-Fluorobiphenyl	54	(44-119)
D_{14}-Terphenyl	67	(33-128)
D_{10}-Pyrene*	62	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range

COMPUCHEM ORGANICS ANALYSIS DATA SHEET
LIBRARY SEARCH RESULTS OF EXTRANEOUS PEAKS &
ESTIMATED CONCENTRATION OF TENTATIVELY IDENTIFIED COMPOUNDS
ANALYTICAL FRACTION: Base/Neutral

DATA FILENAME: BC84921C21 SAMPLE # 84921

ITEM	SCAN NUMBER	CAS #	COMPOUND NAME	% PURITY	ASSESSMENT* RS	OI	UK	ESTIMATED CONC.(ug/l)
1	523	62-53-3	Benzenamine	90.3		X		53
2	617	1758-88-9	Benzene,2-Ethyl-1,4-Dimethyl-	87.6		X		110
3	644	1758-88-9	Benzene,2-Ethyl-1,4-Dimethyl-	87.6		X		82
4	768	91-57-6	Naphthalene,2-Methyl-	83.7		X		420
5	779	91-57-6	Naphthalene,2-Methyl-	88.5		X		110
6	821	92-52-4	1,1'-Biphenyl	83.7		X		340
7	862	629-78-7	Heptadecane	83.6		X		63
8	883	629-78-7	Heptadecane	70.9		X		230
9	902	132-64-9	Dibenzofuran	79.4		X		50
10	937	629-78-7	Heptadecane	72.5		X		120
11	988	629-78-7	Heptadecane	73.5		X		150
12	1118	19314-74-0	4,2-Cresoticacid,6-Methoxy-,Bimol. Ester,Methylester,	43.3			X	450
13	1136	713-46-2	Ethanol,2-[4-(1,1-Dimethylethyl) Phenoxy]-	68.2			X	250
14	1234	27193-86-8	Phenol,Dodecyl-	36.4			X	200
15	1280	57-11-4	Octadecanoicacid	57.0			X	360

1.000 40.00

SPECTROSCOPIST ESB

DATE 05/14/86

(*) RS - REASONABLE IDENTIFICATION, RETENTION TIME COMPATIBILITY
OI - ISOMER OR SIMILAR COMPOUND
UK - UNKNOWN, NOT IN NBS LIBRARY

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18627
COMPUCHEM® SAMPLE NUMBER: 84910

		CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
1B.	N-NITROSODIMETHYLAMINE	BDL	3300
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	3300
3B.	1,3-DICHLOROBENZENE	BDL	3300
4B.	1,4-DICHLOROBENZENE	BDL	3300
5B.	1,2-DICHLOROBENZENE	BDL	3300
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	3300
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	3300
8B.	HEXACHLOROETHANE	BDL	3300
9B.	NITROBENZENE	BDL	3300
10B.	ISOPHORONE	BDL	3300
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	3300
12B.	1,2,4-TRICHLOROBENZENE	16000	3300
13B.	NAPHTHALENE	10000	3300
14B.	HEXACHLOROBUTADIENE	BDL	3300
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	3300
16B.	2-CHLORONAPHTHALENE	BDL	3300
17B.	DIMETHYLPHTHALATE	BDL	3300
18B.	ACENAPHTHYLENE	BDL	3300
19B.	2,6-DINITROTOLUENE	BDL	3300
20B.	ACENAPHTHENE	8600	3300
21B.	2,4-DINITROTOLUENE	BDL	3300
22B.	DIETHYLPHTHALATE	BDL	3300
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	3300
24B.	FLUORENE	3400	3300
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	3300
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	3300
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	3300
28B.	HEXACHLOROBENZENE	BDL	3300

(Continued)

BDL=BELOW DETECTION LIMIT
†See Quality Assurance Notice - #1

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES (Page Two)

SAMPLE IDENTIFIER: 18627
COMPUCHEM® SAMPLE NUMBER: 84910

		CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
29B.	PHENANTHRENE	BDL	3300
30B.	ANTHRACENE	BDL	3300
31B.	DI-N-BUTYLPHTHALATE	BDL	3300
32B.	FLUORANTHENE	BDL	3300
33B.	PYRENE	BDL	3300
34B.	BENZIDINE	BDL	17000
35B.	BUTYLBENZYLPHTHALATE	BDL	3300
36B.	3,3'-DICHLOROBENZIDINE	BDL	6600
37B.	BENZO(A)ANTHRACENE	BDL	3300
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	3300
39B.	CHRYSENE	BDL	3300
40B.	DI-N-OCTYLPHTHALATE	BDL	3300
41B.	BENZO(B)FLUORANTHENE	BDL	3300
42B.	BENZO(K)FLUORANTHENE	BDL	3300
43B.	BENZO(A)PYRENE	BDL	3300
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	3300
45B.	DIBENZO(A,H)ANTHRACENE	BDL	3300
46B.	BENZO(G,H,I)PERYLENE	BDL	3300

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	BDL†	(20-140)
2-Fluorobiphenyl	*BDL†*	*(20-140)*
D_{14}-Terphenyl	BDL†	(20-150)
D_{10}-Pyrene*	BDL†	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range.
†See Quality Assurance Notice - #1

DATA FILENAME: BD084910A21

COMPUCHEM ORGANICS ANALYSIS DATA SHEET
LIBRARY SEARCH RESULTS OF EXTRANEOUS PEAKS &
ESTIMATED CONCENTRATION OF TENTATIVELY IDENTIFIED COMPOUNDS
ANALYTICAL FRACTION: BASE1

SAMPLE # 84910

ITEM	SCAN NUMBER	CAS #	COMPOUND NAME	% PURITY	ASSESSMENT* RS	OI	UK	ESTIMATED CONC. IN UG PER L	KG	ML	G
1	607	1758-88-9	BENZENE,2-ETHYL-1,4-DIMETHYL-	78.0	☐	☒	☐		7700.		
2	613	1758-88-9	BENZENE,2-ETHYL-1,4-DIMETHYL-	84.7	☐	☒	☐		11000.		
3	640	1758-88-9	BENZENE,2-ETHYL-1,4-DIMETHYL-	86.8	☐	☒	☐		3900.		
4	664	62338-57-2	1,4-CYCLOHEXADIENE,3-ETHENYL-1,2-DIMETHYL-	70.1	☐	☐	☒		2200.		
5	724	119-65-3	ISOQUINOLINE	83.5	☐	☒	☐		1400.		
6	764	91-57-6	NAPHTHALENE,2-METHYL-	86.4	☐	☒	☐		16000.		
7	775	91-57-6	NAPHTHALENE,2-METHYL-	90.1	☐	☒	☐		6500.		
8	816	92-52-4	1,1'-BIPHENYL	88.9	☐	☒	☐		23000.		
9	822	629-78-7	HEPTADECANE	76.7	☐	☒	☐		1500.		
10	832	581-40-8	NAPHTHALENE,2,3-DIMETHYL-	83.6	☐	☒	☐		1300.		
11	841	573-98-8	NAPHTHALENE,1,2-DIMETHYL-	84.1	☐	☒	☐		2100.		
12	898	132-64-9	DIBENZOFURAN	81.5	☐	☒	☐		4700.		
13	933	629-78-7	HEPTADECANE	75.3	☐	☒	☐		7600.		
14	984	629-78-7	HEPTADECANE	76.8	☐	☒	☐		7000.		
15	996	104-40-5	PHENOL,4-NONYL-	71.3	☐	☒	☐		10000.		
	333.000			40.00							

SPECTROSCOPIST _____

DATE 5/19/86

(*) RS - REASONABLE IDENTIFICATION, RETENTION TIME COMPATIBILITY
OI - ISOMER OR SIMILAR COMPOUND
UK - UNKNOWN, NOT IN NBS LIBRARY

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18623
COMPUCHEM® SAMPLE NUMBER: 84907

		CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
1B.	N-NITROSODIMETHYLAMINE	BDL	1700
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	1700
3B.	1,3-DICHLOROBENZENE	3200	1700
4B.	1,4-DICHLOROBENZENE	9100	1700
5B.	1,2-DICHLOROBENZENE	5700	1700
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	1700
7B.	N-NITROSODI-N-PROPYLAMINE	BDL	1700
8B.	HEXACHLOROETHANE	BDL	1700
9B.	NITROBENZENE	BDL	1700
10B.	ISOPHORONE	BDL	1700
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	1700
12B.	1,2,4-TRICHLOROBENZENE	61000	1700
13B.	NAPHTHALENE	8700	1700
14B.	HEXACHLOROBUTADIENE	BDL	1700
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	1700
16B.	2-CHLORONAPHTHALENE	BDL	1700
17B.	DIMETHYLPHTHALATE	BDL	1700
18B.	ACENAPHTHYLENE	BDL	1700
19B.	2,6-DINITROTOLUENE	BDL	1700
20B.	ACENAPHTHENE	5300	1700
21B.	2,4-DINITROTOLUENE	BDL	1700
22B.	DIETHYLPHTHALATE	BDL	1700
23B.	4-CHLOROPHENYL PHENYL ETHER	BDL	1700
24B.	FLUORENE	BDL	1700
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	1700
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	1700
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	1700
28B.	HEXACHLOROBENZENE	BDL	1700

(Continued)

BDL=BELOW DETECTION LIMIT

†Sample analyzed using a 5:1 dilution, thus the higher than normal detection limits.

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES (Page Two)

SAMPLE IDENTIFIER: 18623
COMPUCHEM® SAMPLE NUMBER: 84907

		CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
29B.	PHENANTHRENE	BDL	1700
30B.	ANTHRACENE	BDL	1700
31B.	DI-N-BUTYLPHTHALATE	BDL	1700
32B.	FLUORANTHENE	BDL	1700
33B.	PYRENE	BDL	1700
34B.	BENZIDINE	BDL	8300
35B.	BUTYLBENZYLPHTHALATE	BDL	1700
36B.	3,3'-DICHLOROBENZIDINE	BDL	3300
37B.	BENZO(A)ANTHRACENE	BDL	1700
38B.	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	1700
39B.	CHRYSENE	BDL	1700
40B.	DI-N-OCTYLPHTHALATE	BDL	1700
41B.	BENZO(B)FLUORANTHENE	BDL	1700
42B.	BENZO(K)FLUORANTHENE	BDL	1700
43B.	BENZO(A)PYRENE	BDL	1700
44B.	INDENO(1,2,3-C,D)PYRENE	BDL	1700
45B.	DIBENZO(A,H)ANTHRACENE	BDL	1700
46B.	BENZO(G,H,I)PERYLENE	BDL	1700

Surrogates Recoveries - Introduced at the beginning of the extraction, surrogate standards are deuterated and/or select compounds that analytically mimic the response of certain analytes. Known concentrations of these surrogates are added to the sample and a percent recovery is calculated. This recovery acts as a barometer of extraction efficiency and analytical response for the individual sample.

	%Recovery	Control Range%
D_5-Nitrobenzene	74	(20-140)
2-Fluorobiphenyl	77	(20-140)
D_{14}-Terphenyl	85	(20-150)
D_{10}-Pyrene*	82	*

BDL=BELOW DETECTION LIMIT
*Advisory Surrogate; therefore no control range.

†Sample analyzed using a 5:1 dilution, thus the higher than normal detection limits.

JATA FILENAME: BD084907A21

COMPUCHEM ORGANICS ANALYSIS DATA SHEET
LIBRARY SEARCH RESULTS OF EXTRANEOUS PEAKS &
ESTIMATED CONCENTRATION OF TENTATIVELY IDENTIFIED COMPOUNDS
ANALYTICAL FRACTION: BASE1

SAMPLE # 84907

ITEM	SCAN NUMBER	CAS #	COMPOUND NAME	% PURITY	ASSESSMENT* RS	OI	UK	ESTIMATED CONC. IN UG PER L	KG	ML	G
1	610	1758-88-9	BENZENE,2-ETHYL-1,4-DIMETHYL-	86.5	☐	☑	☐		3800.		
2	638	527-53-7	BENZENE,1,2,3,5-TETRAMETHYL-	82.8	☐	☑	☐		5400.		
3	706	87-61-6	BENZENE,1,2,3-TRICHLORO-	85.9	☐	☑	☐		4700.		
4	761	91-57-6	NAPHTHALENE,2-METHYL-	89.7	☐	☑	☐		17000.		
5	772	91-57-6	NAPHTHALENE,2-METHYL-	88.3	☐	☑	☐		8500.		
6	813	92-52-4	1,1'-BIPHENYL	88.3	☐	☑	☐		29000.		
7	930	629-78-7	HEPTADECANE	75.8	☐	☑	☐		5500.		
8	939	54932-78-4	PHENOL,4-(2,2,3,3-TETRAMETHYLBUTYL)-	84.5	☐	☑	☐		4900.		
9	981	629-78-7	HEPTADECANE	72.1	☐	☑	☐		7400.		
10	993	104-40-5	PHENOL,4-NONYL-	73.1	☐	☑	☐		11000.		
11	1012	54932-78-4	PHENOL,4-(2,2,3,3-TETRAMETHYLBUTYL)-	62.9	☐	☑	☐		7700.		
12	1076	55334-42-4	DODECANE,1,2-DIBROMO-	42.6	☐	☐	☑		5400.		
13	1312	55401-65-5	PENTALENE,OCTAHYDRO-1-(2-OCTYLDECYL)-	52.1	☐	☑	☑		7300.		
14	1380	55401-65-5	PENTALENE,OCTAHYDRO-1-(2-OCTYLDECYL)-	50.5	☐	☐	☑		8200.		
15	1444	55401-65-5	PENTALENE,OCTAHYDRO-1-(2-OCTYLDECYL)-	45.9	☐	☐	☑		5000.		
	166.000	40.00									

SPECTROSCOPIST _____

DATE 5/19/86

(*) RS - REASONABLE IDENTIFICATION, RETENTION TIME COMPATIBILITY
OI - ISOMER OR SIMILAR COMPOUND
UK - UNKNOWN, NOT IN NBS LIBRARY

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLES

SAMPLE IDENTIFIER: 18630A
COMPUCHEM® SAMPLE NUMBER: 84922

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	N-NITROSODIMETHYLAMINE	BDL	10
2B.	BIS (2-CHLOROETHYL) ETHER	BDL	10
3B.	1,3-DICHLOROBENZENE	BDL	10
4B.	1,4-DICHLOROBENZENE	34	10
5B.	1,2-DICHLOROBENZENE	BDL	10
6B.	BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
7B.	HEXACHLOROETHANE	BDL	10
8B.	N-NITROSODI-N-PROPYLAMINE	BDL	10
9B.	NITROBENZENE	BDL	10
10B.	ISOPHORONE	BDL	10
11B.	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12B.	1,2,4-TRICHLOROBENZENE	BDL	10
13B.	NAPHTHALENE	BDL	10
14B.	HEXACHLOROBUTADIENE	BDL	10
15B.	HEXACHLOROCYCLOPENTADIENE	BDL	10
16B.	2-CHLORONAPHTHALENE	BDL	10
17B.	DIMETHYLPHTHALATE	BDL	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
20B.	ACENAPHTHENE	BDL	10
21B.	2,4-DINITROTOLUENE	BDL	10
22B.	DIETHYLPHTHALATE	BDL	10
23B.	FLUORENE	BDL	10
24B.	4-CHLOROPHENYL PHENYL ETHER	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
26B.	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	BDL	10
27B.	4-BROMOPHENYL PHENYL ETHER	BDL	10
28B.	HEXACHLOROBENZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

DATA FILENAME: BC084922C21

COMPUCHEM ORGANICS ANALYSIS DATA SHEET
LIBRARY SEARCH RESULTS OF EXTRANEOUS PEAKS &
ESTIMATED CONCENTRATION OF TENTATIVELY IDENTIFIED COMPOUNDS
ANALYTICAL FRACTION: BASE1

SAMPLE # 84922

ITEM	SCAN NUMBER	CAS #	COMPOUND NAME	% PURITY	ASSESSMENT* RS	OI	UK	ESTIMATED CONC. IN UG PER L	KG	ML	G
1	510	62016-14-2	OCTANE,2,5,6-TRIMETHYL-	81.3	☐	☒	☐		43.		
2	546	124-18-5	DECANE	88.9	☐	☒	☐		49.		
3	568	535-77-3	BENZENE,1-METHYL-3-(1-METHYLETHYL)-	73.3	☐	☒	☐		450.		
4	574	5989-54-8	CYCLOHEXENE,1-METHYL-4-(1-METHYLETHENYL)-,(S)-	75.5	☐	☐	☒		740.		
5	593	1186-53-4	PENTANE,2,2,3,4-TETRAMETHYL-	74.7	☐	☒	☐		76.		
6	599	17301-22-3	UNDECANE,2,5-DIMETHYL-	86.3	☐	☒	☐		46.		
7	610	18344-37-1	HEPTADECANE,2,6,10,14-TETRAMETHYL-	77.6	☐	☒	☐		40.		
8	619	673-84-7	2,4,6-OCTATRIENE,2,6-DIMETHYL-	63.6	☐	☐	☒		43.		
9	627	1120-21-4	UNDECANE	88.1	☐	☒	☐		94.		
10	662	54725-73-4	1,8-NONANEDIOL,8-METHYL-	73.2	☐	☒	☐		88.		
11	677	17301-22-3	UNDECANE,2,5-DIMETHYL-	79.4	☐	☒	☐		110.		
12	698	29812-79-1	HYDROXYLAMINE,O-DECYL-	82.0	☐	☒	☐		68.		
13	1066	58-08-2	1H-PURINE-2,6-DIONE,3,7-DIHYDRO-1,3,7-TRIMETHYL-	76.8	☐	☒	☐		110.		
14	1558	1249-75-8	CHOLAN-24-OICACID,3-HYDROXY-,METHYLESTER,(3.ALPHA.,5	43.6	☐	☐	☒		600.		
15	1581	6079-19-2	CHOLESTANE,4,5-EPOXY-,(4.ALPHA.,5.ALPHA.)-	46.7	☐	☐	☒		790.		
	1.000	40.00									

SPECTROSCOPIST [signature]

DATE 5/14/86

(*) RS - REASONABLE IDENTIFICATION, RETENTION TIME COMPATIBILITY
OI - ISOMER OR SIMILAR COMPOUND
UK - UNKNOWN, NOT IN NBS LIBRARY