

**EXHIBIT 5**

Immediate Response Action Plan

Release of #6 Fuel Oil

DEP Release Tracking Number: 3-20799

Pennoni Associates

August 13, 2001



IMMEDIATE RESPONSE ACTION (IRA)
TRANSMITTAL FORM Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart

Release Tracking

3 - 20799

A. RELEASE OR THREAT OF RELEASE LOCATION:

Release Name: Medfield State Hospital
Street: 45 Hospital Road Location Aid: Facility Power Plant
City/Town: Medfield ZIP

- Check here if a Tier Classification Submittal has been provided to DEP for this Release Tracking Number.
Check here if this location is Adequately Regulated, pursuant to 310 CMR 40.0110-0114.
Specify Program: CERCLA HSWA Corrective Action Solid Waste Management RCRA State Program (21C Facilities)

Related Release Tracking Numbers That This IRA

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

- Submit an IRA Plan (complete Sections A, B, C, D, E, H, I, J and K).
Check here if this IRA Plan is an update or modification of a previously approved written IRA Plan.
Submit an Imminent Hazard Evaluation (complete Sections A, B, C, F, H, I, J and K).
Submit an IRA Status Report (complete Sections A, B, C, E, H, I, J and K).
Submit a Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard (complete Sections A, B, C, D, E, H, I, J and K).
Submit an IRA Completion Statement (complete Sections A, B, C, D, E, G, H, I, J and K).

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. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT

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

Identify Conditions That Require IRA, Pursuant to 310 CMR 40.0412: (check all that) 2 Hour Reporting Condition(s)
72 Hour Reporting Condition(s) Substantial Release Migration Other Condition(s)

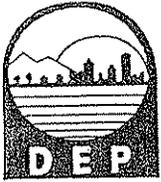
Describe release of No. 6 fuel oil from UST. Identification of free product in observation well greater than 1/2" in thickness.

Identify Oils and Hazardous Materials Released: (check all that) Oils Chlorinated Solvents Heavy Metals
Others Specify

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

- Assessment and/or Monitoring Only
Excavation of Contaminated Soils
Re-use, Recycling or Treatment
On Site Off Site Est. Vol.: cubic yards
Store On Site Off Site Est. Vol.: cubic yards
Landfill Cover Disposal Est. Vol.: cubic yards
Removal of Drums, Tanks or Containers
Deployment or Absorbent or Containment Materials
Temporary Covers or Caps
Bioremediation
Soil Vapor Extraction
Structure Venting System
Product or NAPL Recovery
Groundwater Treatment Systems
Air Sparging
Temporary Water Supplies

SECTION D IS CONTINUED ON THE NEXT PAGE.



Release Tracking

**IMMEDIATE RESPONSE ACTION (IRA)  
TRANSMITTAL FORM** Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart

3 - 20799

**D. DESCRIPTION OF RESPONSE ACTIONS (continued):**

- Removal of Other Contaminated Media  
Specify Type and \_\_\_\_\_
- Other Response Actions Describe \_\_\_\_\_
- Check here if this IRA involves the use of Innovative Technologies (DEP is interested in using this information to aid in creating an Innovative Technologies Clearinghouse).  
Describe \_\_\_\_\_

- Temporary Evacuation or Relocation of Residents
- Fencing and Sign Posting

**E. TRANSPORT OF REMEDIATION WASTE:** (if Remediation Waste has been sent to an off-site facility, answer the following

Name of \_\_\_\_\_  
 Town and \_\_\_\_\_  
 Quantity of Remediation Waste Transported to \_\_\_\_\_

**F. IMMEDIATE HAZARD EVALUATION SUMMARY:** (check one of the following)

- Based upon an evaluation, an Imminent Hazard exists in connection with this Release or Threat of Release.
- Based upon an evaluation, an Imminent Hazard does not exist in connection with this Release or Threat of Release.
- Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release, and further assessment activities will be undertaken.
- Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release. However, response actions will address those conditions that could pose an Imminent Hazard.

**G. IRA COMPLETION STATEMENT:**

- Check here if future response actions addressing this Release or Threat of Release will be conducted as part of the Response Actions planned for a Site that has already been Tier Classified under a different Release Tracking Number, or a Site that is identified on the Transition List as described in 310 CMR 40.0600 (i. e., a Transition Site, which includes Sites with approved Waivers). These additional response actions must occur according to the deadlines applicable to the earlier Release Tracking Number (i. e., Site ID Number).

State Release Tracking Number (i. e., Site ID Number) of Tier Classified Site or Transition \_\_\_\_\_

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the IRA 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 IRA Completion Statement.

**H. 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,

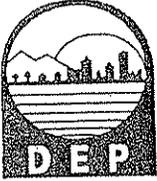
> if Section B of this form indicates that an Immediate Response Action Plan is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate 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 an Imminent Hazard Evaluation is being submitted, this Imminent Hazard Evaluation was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the assessment activity(ies) undertaken to support this Imminent Hazard Evaluation complies(y) with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> if Section B of this form indicates that an Immediate Response 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 an Immediate Response Action Completion Statement or a Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard 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.

SECTION H IS CONTINUED ON THE NEXT PAGE.



**IMMEDIATE RESPONSE ACTION (IRA)**  
**TRANSMITTAL FORM** Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

3 - 20799

**H. LSP Opinion (continued):**

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.

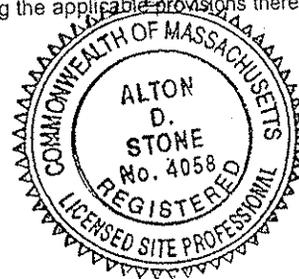
LSP Alton Dav Stone LSP #: 4058 Stamp:

Telephone 603-226-1950 Ext.: \_\_\_\_\_

FAX: \_\_\_\_\_

Signature: Alton Dav Stone

Date: 8/10/01



**I. PERSON UNDERTAKING IRA:**

Name of Department of Mental Health

Name of William Corliss Title: Director of Facilities Mgmt

Street: 25 Staniford Street

City/Town: Boston State MA ZIP Code: 02114-0000

Telephone: 617-626-8049 Ext.: \_\_\_\_\_ FAX: \_\_\_\_\_

Check here if there has been a change in the person undertaking the IRA.

**J. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING IRA:** (check one)

RP or PRP Specify  Owner  Operator  Generator  Transporter Other RP or \_\_\_\_\_

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 IRA Specify \_\_\_\_\_

**K. CERTIFICATION OF PERSON UNDERTAKING IRA:**

I, William Corliss, 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: William Corliss Title: Director of Facilities Mgmt  
(signature)

For William Corliss Date: 8/16/01  
(print name of person or entity recorded in Section I)

Enter address of the person providing certification, if different from address recorded in

Street: \_\_\_\_\_

City/Town: \_\_\_\_\_ State \_\_\_\_\_ ZIP Code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Ext. \_\_\_\_\_ FAX: \_\_\_\_\_

**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.**



PENNONI ASSOCIATES INC.  
CONSULTING ENGINEERS

The Concord Center, Suite 434  
10 Ferry Street, Unit 6  
Concord, NH 03301-2319  
Tel: 603•226•1950  
Fax: 603•226•3235

**IMMEDIATE RESPONSE ACTION PLAN**

**RELEASE OF #6 FUEL OIL**

**DEP RELEASE TRACKING NUMBER: 3-20799**

**MEDFIELD STATE HOSPITAL  
45 HOSPITAL ROAD  
MEDFIELD, MASSACHUSETTS**

**Project No. DOMH0101**

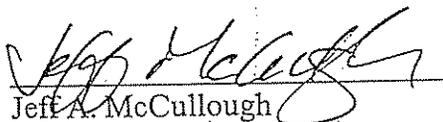
**Prepared For:**

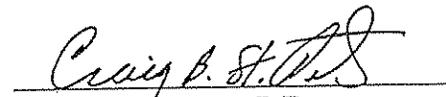
The Commonwealth of Massachusetts  
Department of Mental Health  
25 Staniford Street  
Boston, MA 02114

**Prepared By:**

Pennoni Associates Inc.  
The Concord Center, Suite 434  
10 Ferry Street, Unit 6  
Concord, NH 03301

August 13, 2001

  
Jeff A. McCullough  
Project Manager

  
Craig B. St. Peter, P.E.  
New England Regional Manager

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Immediate Response Action (IRA) Transmittal Form, BWSC-105

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## 1.0 INTRODUCTION

This Immediate Response Action (IRA) Plan has been prepared in response to a subsurface release of #6 fuel oil from a 30,000-gallon underground storage tank (UST) situated at the Power Plant facility of the Medfield State Hospital, located in Medfield, Massachusetts (the property). The location of the property is shown on Figure 1, Disposal Site Location Map. The required release notification to the Massachusetts Department of Environmental Protection (DEP) within 72 hours was assigned Release Tracking Number (RTN) 3-20799.

This report documents IRA activities which are ongoing at the disposal site pursuant to the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000, Sections 40.0410 through 40.0429. The IRA Plan is for assessment only and consists of the installation of test borings and monitoring wells for the assessment of soil and groundwater conditions on the disposal site. Only an assessment investigation was approved by the DEP on June 15, 2001.

The Department of Mental Health is assuming responsibility for the IRA. Mr. William Corliss, Director of Facilities Management, 25 Staniford Street, Boston, Massachusetts 02114 (617-626-8049), is the contact person for the Department of Mental Health.

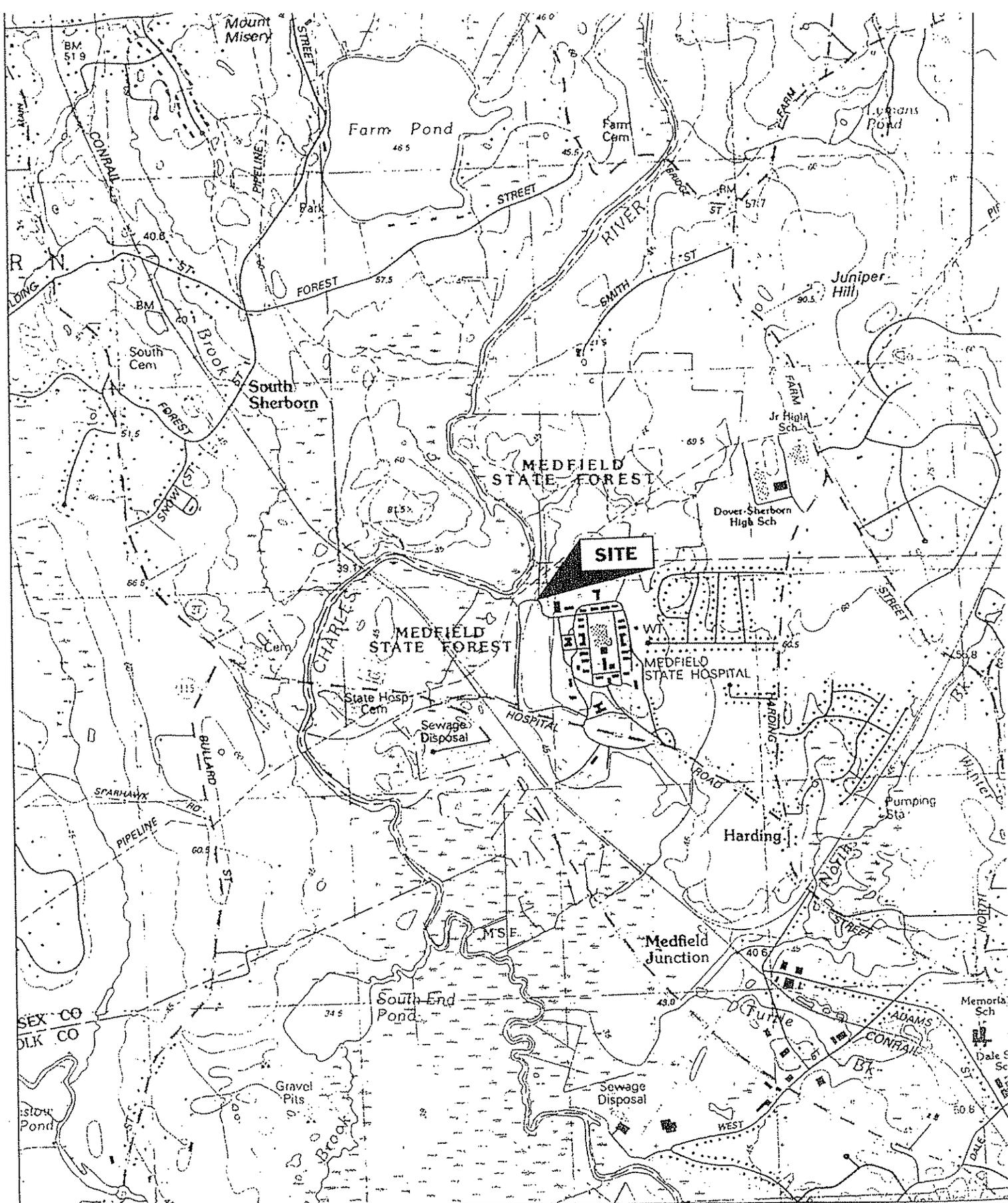
## 2.0 RELEASE AND DISPOSAL SITE DESCRIPTION

The Department of Mental Health operates the Medfield State Hospital for psychiatric care. The hospital facilities occupy approximately 400 acres and are located 2 miles north of Medfield. The developed land is about 75 acres in size and is improved by 42 brick buildings and associated roadways, paved parking and landscaped areas.

The Power Plant is a two-story brick building which houses oil-fired boilers that produce steam pressure. The steam is used to heat the facilities on the property. The UST system consists of three 30,000-gallon capacity tanks. The tanks are double-walled steel and were installed in 1990. The existing USTs replaced three 30,000 gallon USTs which were in service since the early 1960s. The USTs were always used for the storage of No. 6 fuel oil. It is believed that there is a concrete ballast pad below the USTs, at a depth of approximately 14 feet.

In the immediate area of the USTs, the surface is covered with an 8-inch thick concrete pad. A temporary boiler is located on the concrete pad. The adjacent driveway and parking lot is paved with asphalt. Surface topography slopes from the east to west. Two catch basins, to the north and east of the UST pad area, collect surface water and discharge to an outfall structure. The outfall structure is located approximately 55 feet north of the UST pad area. Surface waters discharge onto the ground surface at the outfall structure. Beyond the asphalt area, to the north and west, is undeveloped woodlands. The Charles River is located approximately 500 feet north of the UST pad area.

As noted above, the existing USTs were installed in 1990. At that time, the three former USTs were removed. During removal activities, a release of approximately 2,000 gallons of No.6 fuel oil was identified and Site No. 3-0001684 was assigned to the release on January 15, 1990. Remedial response was conducted in March 1997. Corporate Environmental Engineering of Worcester, MA performed a Phase I Site Investigation and Tier Classification for Site No. 3-0001684. As part of



Name: MEDFIELD  
 Date: 7/23/101  
 Scale: 1 inch equals 2000 feet

Location: 042° 12' 47.7" N 071° 20' 23.1" W  
 Caption: Medfield State Hospital  
 45 Hospital Road  
 Medfield, MA

the Phase I work, a total of six monitoring wells were installed on the property (see Figure 2). On December 28, 1998, Camp Dresser & McKee Inc. submitted a Response Action Outcome Statement for Site No. 3-0001684.

On October 27, 1999, Pennoni Associates (Pennoni) performed tightness testing on Tank#2 and Tank#3. Both tanks failed the tests. An investigation determined that the failure of the tightness tests was a result of extensive corrosion and holes in the vicinity of the manways for the two tanks. Verbal notifications were made to both the Medfield Fire Department and to the DEP on October 28, 1999 and November 2, 1999 (DEP contact was Brad Stewart). A release tracking number was not assigned to the release at that time by the DEP. A Notice of Intent (NOI) was submitted to the Medfield Conservation Commission in December 1999 for the UST investigation and repair, and an Order of Conditions was issued.

In late May 2001, the closure of Tank#2 and Tank#3 was conducted under the oversight of Pennoni. The original scope of work included removal of tank sludges, triple-rinsing the tank interiors, and filling the tanks with concrete slurry. During UST closure activities, soil samples were collected on June 1, 2001 from the pea gravel beneath Tank#2 and Tank#3 and analyzed for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) by DEP method. Analytical results indicate that aliphatics, aromatics, 2-methylnaphthalene, and naphthalene exceeded DEP Reportable Concentrations. Table 1 presents a summary of the soil analytical results.

A total of eight 4-inch diameter slotted polyvinyl chloride (PVC) observations wells are located along the perimeter of the USTs. On June 15, 2001, Pennoni gauged all eight wells with a bailer. Inspection of the observation well located at the west end of Tank #2 indicated the presence of non-aqueous phase liquid (NAPL) (i.e. No.6 fuel oil), approximately 14 inches in thickness at a depth of about 11 feet. No other wells indicated the presence of free product. Two other wells had 3 to 4 inches of water. In accordance with the MCP, verbal notification of the release was submitted to Chris Bresnahan of the DEP at 12:08 p.m. on June 15, 2001. At that time, Release Tracking Number 3-20799 was assigned to the release. The time of the release and the quantity of the release are not known.

On July 24, 2001, the DMH decided to complete the closure of Tank #2 and Tank #3, pursuant to 527CMR9 Tanks and Containers. Both tanks were filled in-place with concrete slurry.

The scope of the IRA activities is designed to evaluate, to the extent feasible, the vertical and horizontal extent of contamination on the disposal site. IRA activities are discussed further in Section 5.0. Groundwater samples were collected from the disposal site and are discussed in Section 5.0.

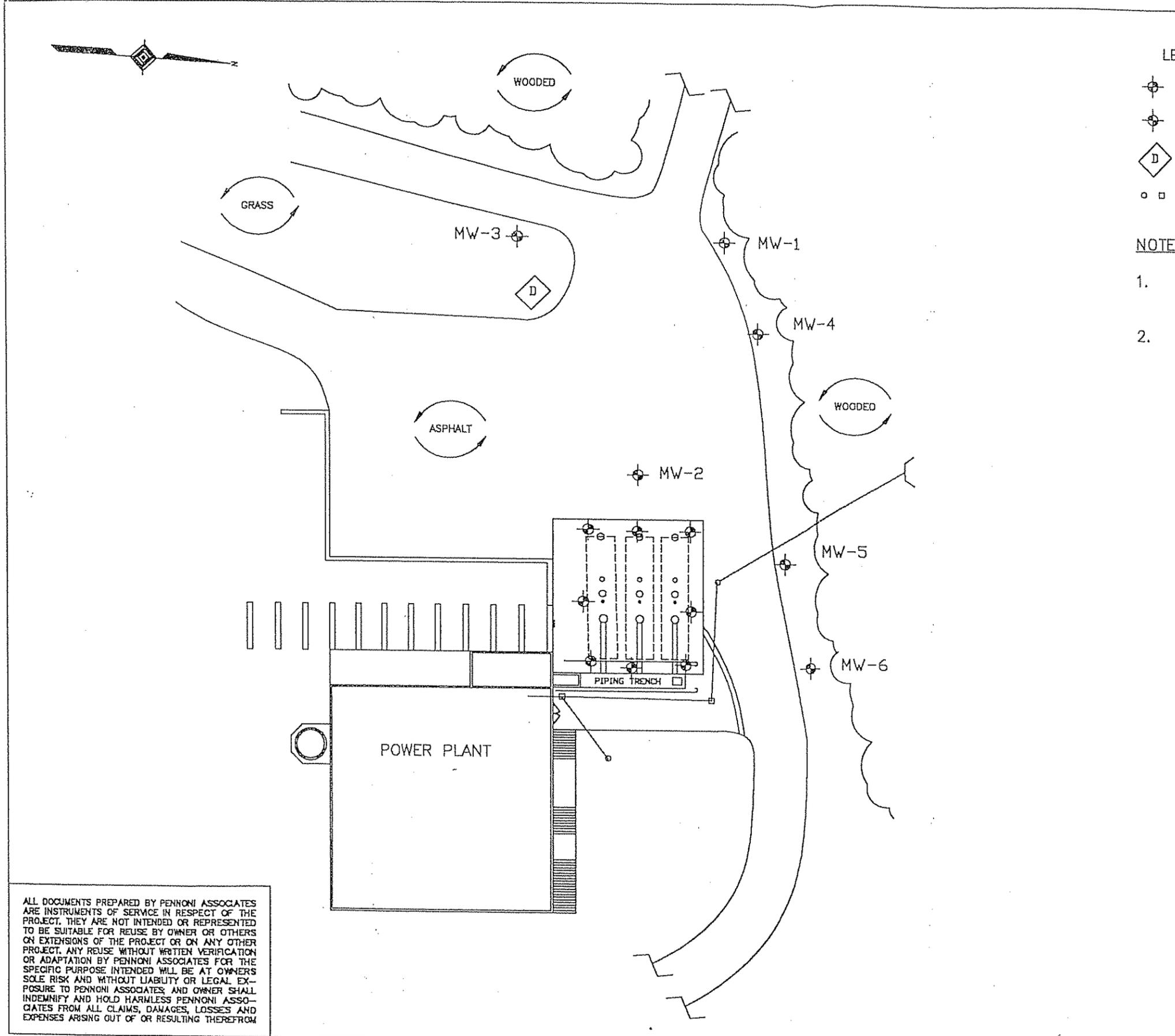
The disposal site includes the locations of the fuel oil supply and return lines, the three USTs and any soil and groundwater in the vicinity of the fuel oil lines to which petroleum-related OHM have been located. The location of the power plant building and the UST system are illustrated on Figure 2, Disposal Site Plan.

**TABLE 1**  
**Soil Samples - Summary of Analytical Results**  
 Medfield State Hospital  
 45 Hospital Road, Medfield, MA  
 RTN 3-20799

Sample Identification	Sample Date Sample Depth	Tank #2 West 6/1/01 see note 1	Tank #3 West 6/1/01 see note 1	Tank #3 East 6/1/01 see note 1	Reportable Concentration		Risk Characterization Standards		
					RCS-1	RCGW-2	Category S-1/GW-2	Category S-1/GW-3	
Extractable Petroleum Hydrocarbons (EPH) by DEP Method									
C9-C18 Aliphatics		ND	428	1370	1,000	1	1,000	1,000	1,000
C19-C36 Aliphatics	1510	1990	5490	5490	2,500	20	2,500	2,500	2,500
C11-C22 Aromatics	1750	2220	5790	5790	700	30	800	800	800
Acenaphthene	ND	ND	ND	ND	20	5	1,000	1,000	1,000
Acenaphthylene	ND	ND	ND	ND	100	3	100	100	100
Anthracene	ND	ND	ND	ND	1,000	0.6	1,000	1,000	1,000
Benzo(a)anthracene	ND	ND	ND	ND	0.7	3	0.7	0.7	0.7
Benzo(a)pyrene	ND	ND	ND	ND	0.7	3	0.7	0.7	0.7
Benzo(b)fluoranthene	ND	ND	ND	ND	0.7	3	0.7	0.7	0.7
Benzo(g,h,i)perylene	ND	ND	ND	ND	1,000	3	1,000	1,000	1,000
Benzo(k)fluoranthene	ND	ND	ND	ND	7	7	7	7	7
Chrysene	ND	ND	ND	ND	7	3	7	7	7
Dibenz(a,h)anthracene	ND	ND	ND	ND	0.7	3	0.7	0.7	0.7
Fluoranthene	ND	ND	ND	ND	1,000	0.2	1,000	1,000	1,000
Fluorene	ND	ND	ND	ND	400	3	1,000	1,000	1,000
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	0.7	3	0.7	0.7	0.7
2-Methylnaphthalene	ND	ND	17.1	53.3	4	3	500	500	500
Naphthalene	ND	ND	ND	ND	4	6	100	100	100
Phenanthrene	ND	10.6	30.6	30.6	100	0.05	1,000	1,000	1,000
Pyrene	ND	ND	ND	ND	700	3	700	700	700
Volatile Petroleum Hydrocarbons (VPH) by DEP Method									
C5-C8 Aliphatics	ND	ND	ND	62	100	1	100	100	100
C9-C12 Aliphatics	159	160	334	334	1,000	1	1,000	1,000	1,000
C9-C10 Aromatics	ND	106	240	240	100	1	100	100	100
Benzene	ND	ND	ND	ND	10	2	30	30	30
Toluene	ND	ND	ND	ND	90	6	500	500	500
Ethylbenzene	0.11	0.31	1.0	1.0	80	4	500	500	500
Total Xylenes	1.06	2.51	8.1	8.1	500	6	500	500	500
Methyl Tertiary Butyl Ether (MTBE)	ND	ND	ND	ND	0.3	50	100	100	100
Naphthalene	1.25	6.83	20.8	20.8	4	6	100	100	100

All results are in milligrams per kilogram (mg/kg).  
 ND Not detected above laboratory detection limit.  
 Not analyzed.  
 Exceeds RCS-1 Reportable Concentration.

1 - Samples collected from soil beneath specified underground storage tank.



LEGEND:

- ⊕ OBSERVATION WELL
- ⊕ MONITORING WELL
- ◇ DUMPSTER
- CATCH BASIN

NOTES:

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. THREE 30,000-GALLON DOUBLE-WALLED STEEL USTS WERE INSTALLED IN 1990

GRAPHIC SCALE



( IN FEET )

1 inch = 40 feet

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES, AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM

DISPOSAL SITE PLAN

LOCATION 45 HOSPITAL ROAD, MEDFIELD, MA			
CLIENT MASSACHUSETTS DEPARTMENT OF MENTAL HEALTH			
SCALE 1" = 40'	SHEET 1/1	PAI PROJECT NO. DOMH0101	
DRAWN BY PWL	APPROVED BY JMCC	DATE 8/09/01	DRAW NO. SITEPLAN.DWG

**PENNONI ASSOCIATES INC.**  
 THE CONCORD CENTER, SUITE 434, 10 FERRY ST.  
 UNIT 6, CONCORD, NH 03301

### 3.0 SENSITIVE RECEPTORS

Medfield personnel are typically on the property between 8:00 AM and 5:00 PM Monday through Friday, and have an 8-hour workday, 5 days per week. Facility personnel would also be considered frequent visitors to the disposal site. The hospital patients are not located within 500 feet of the disposal site.

According to the July 17, 2001 MassGIS Site Scoring Map, (Figure 3) the nearest surface water body is the Charles River located approximately 500 feet north of the disposal site. The surrounding area is a wetland area that is located approximately 200 feet north and west of the disposal site.

According to the MassGIS Site Scoring Map, the disposal site is not located within an Interim Wellhead Protection Area or within an Approved Zone 2. The disposal site is located in a Protected Open Space known as an Area of Critical Environmental Concern (ACEC). Potential receptors in the ACEC would be flora and fauna; however, groundwater is not directly accessible for these receptors.

The surface water of the Charles River is a potential receptor for the groundwater at the disposal site. This would include wildlife use of the waters. Human contact with the surface waters could potentially occur in the form of swimming.

No. 6 fuel oil was identified approximately 11 feet below the exterior ground surface level in the vicinity of Tank #2 at the disposal site. The potential for human exposure to OHM via dermal contact or ingestion is low. A majority of the accessible portions of the disposal site are either covered with asphalt pavement or a concrete slab. No private potable water supply wells are known to be located in the vicinity of the disposal site. The potential exposure to OHM via inhalation, due to vapor migration into the power plant building, is low.

Groundwater on the disposal site was encountered at a depth of approximately 16 feet below ground surface and, therefore, groundwater is not considered to be a potential source of vapor migration into the building.

### 4.0 REASON FOR IRA

A subsurface release of fuel oil to the environment was identified during a site inspection conducted by Pennoni, which required notification to the DEP within 72 hours. Pursuant to the MCP Section 40.0412(2), an IRA is required for all sites where a release requiring notification within 72 hours has been identified.

### 5.0 IRA OBJECTIVES AND SCOPE OF WORK

The objectives of the IRA are to assess the potential for migration of petroleum-related OHM across the disposal site. The release of No.6 fuel oil has the potential to affect the nearby Charles River and associated wetlands, and an Area of Critical Environmental Concern. The scope of work includes the following tasks.

# MA DEP - Bureau of Waste Site Cleanup

## Site Scoring Map: 500 feet & 0.5 Mile Radii

**SITE NAME:**

Medfield State Hospital  
 45 Hospital Road  
 Medfield, MA  
 421247n 712022ew

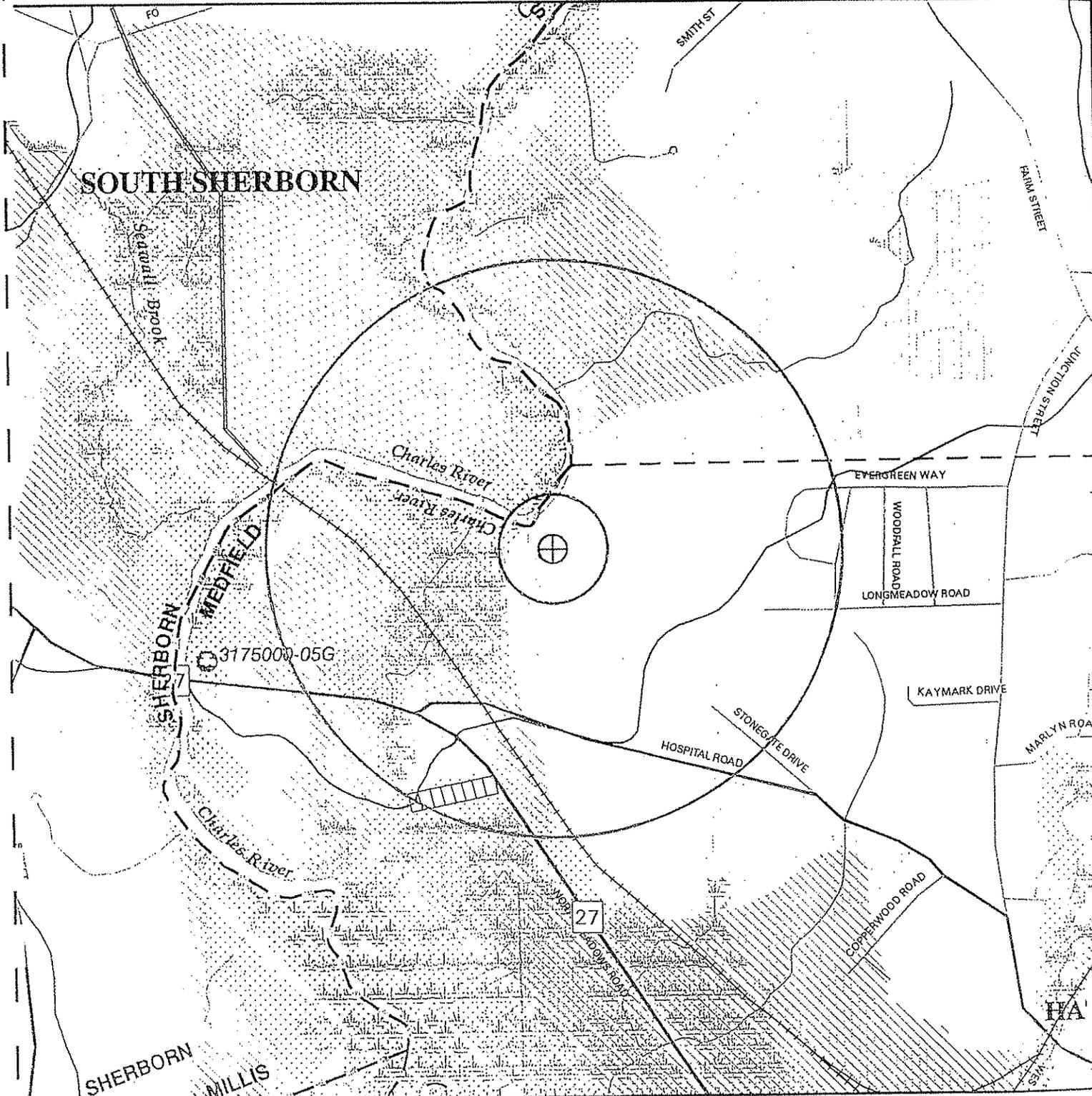


The information shown on this map is the best available at the date of printing. Please refer to the data source descriptions document.

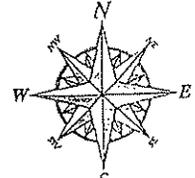


Massachusetts Geographic Information System

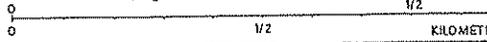
Massachusetts Executive Office of Environmental Affairs - 2001



Roads: Limited Access, Divided, Major Road, Connector, Street, Track, Trail	EPA Sole Source Aquifer; FEMA 100-year floodplain	.....	[Symbol]
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct	Public Water Supplies: Ground, Surface, Non Community	[Symbol]	[Symbol]
Basins: Major, Sub; Streams: Perennial, Intermittent, Man Made Shore, Dams	Approved Zone 2; IWPA; Surface Water Supply Zone A	[Symbol]	[Symbol]
Potentially Productive Aquifers: Medium, High Yield	Hydrography: Water Features, Public Surface Water Supply	[Symbol]	[Symbol]
Non-Potential Drinking Water Source Area: Medium, High Yield	Wetlands: Fresh, Salt, NHESP Wetlands Habitat	[Symbol]	[Symbol]
	Protected Open Space; ACEC	[Symbol]	[Symbol]
	DEP Permitted Solid Waste Facilities; Certified Vernal Pools	[Symbol]	[Symbol]



SCALE 1:15000



July 17, 2001

## 5.1 Subsurface Investigation and Soil Sample Analysis

Pennoni will conduct an investigation of the soil conditions beneath and in the vicinity of the existing USTs. Pennoni will supervise the advancement of up to six vertical test borings and up to three angle borings. Test borings will be advanced by a Massachusetts-licensed driller. During test boring advancement, split-spoon soil samples will be collected and field-screened for the presence of volatile vapors using a photoionization detector (PID). Selected soil samples collected from the test borings will be submitted for laboratory analysis of VPH and EPH by the DEP methods.

## 5.2 Monitoring Well Installation, Survey, and Groundwater Sample Analysis

A minimum of two monitoring wells will be installed in selected test borings to provide additional information to evaluate the potential vertical and horizontal extent of contamination downgradient from the potential source (note: six monitoring wells are currently in place). All wells will be constructed of 2-inch diameter, thread-coupled Schedule 40 PVC piping. A 10-foot length of machine-slotted, 0.020-inch slot well screen will be placed across the water table in each well. The well annulus around each screen will be packed with clean silica sand to a height of one foot above the top of the well screen. The PVC well casings will extend to the surface. A 2-foot thick bentonite seal will be placed in the annular space above the sandpack. The remaining boring annulus will be backfilled to within two feet of the ground surface with soil cuttings. Cement/bentonite grout will be placed in the open borings. Each well will be finished at grade with an aluminum road box cemented flush with the surface, equipped with a locking cap. All monitoring wells will be developed using pumping and surging methods.

The elevation of the top of the PVC casing for each monitoring well will be surveyed using standard leveling and stadia techniques, relative to an arbitrary datum of 100.00 feet situated at the northwest corner of the retaining wall adjacent to the power plant building.

All monitoring wells will be gauged for depth to water using a Solinst depth to water probe. The probe is capable of measuring depth to water to the nearest 0.01 foot. Investigation of possible NAPL will be conducted by inserting a clean, clear bailer into the well approximately half the volume of the bailer and recording any NAPL layer thickness upon the initial purge. Groundwater samples will be collected from the new monitoring wells and submitted for laboratory analysis of VPH and EPH.

In addition, a bail drawdown test will be conducted on the observation well where fuel product was discovered, in order to determine the thickness of product and elevation relative to the groundwater table.

On June 21, 2001, groundwater samples were collected from the six existing monitoring wells located in the vicinity of the UST tank area and submitted for laboratory analysis of VPH and EPH. Aliphatic, aromatics and ethylbenzene were detected in the groundwater sample collected from monitoring well MW-2 at concentrations well below their respective GW-2 and GW-3 standards. Groundwater analytical results are summarized in Table 2 and a copy of the laboratory report is provided in Appendix A.

TABLE 2  
Groundwater Samples - Summary of Analytical Results  
Medfield State Hospital  
45 Hospital Road, Medfield, MA  
RTN 3-20799

Sample Identification Sample Date	MW-1 6/21/01	MW-2 6/21/01	MW-3 6/21/01	MW-4 6/21/01	MW-5 6/21/01	MW-6 6/21/01	Reportable Concentration RCGW-2	Method 1 Risk Characterization Standards	
								Category GW-2	Category GW-3
Extractable Petroleum Hydrocarbons (EPIH) by DEP Method									
C9-C18 Aliphatics	ND	154	ND	ND	ND	ND	1000	1,000	20,000
C19-C36 Aliphatics	ND	548	99	128	ND	ND	20000	NS	20,000
C11-C22 Aromatics	ND	574	86-4	61-4	ND	ND	30000	50,000	30,000
Acenaphthene	ND	ND	ND	ND	ND	ND	5000	NS	5,000
Acenaphthylene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Anthracene	ND	ND	ND	ND	ND	ND	600	NS	3,000
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Chrysene	ND	ND	ND	ND	ND	ND	0.5	NS	3,000
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	200	NS	200
Fluoranthene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Fluorene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	3000	10,000	3,000
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	6000	6,000	6,000
Naphthalene	ND	ND	ND	ND	ND	ND	30	NS	50
Phenanthrene	ND	ND	ND	ND	ND	ND	3000	NS	3,000
Pyrene	ND	ND	ND	ND	ND	ND			
Volatile Petroleum Hydrocarbons (VPH) by DEP Method									
C5-C8 Aliphatics	ND	ND	ND	ND	ND	ND	1000	1,000	4,000
C9-C12 Aliphatics	ND	ND	ND	ND	ND	ND	1000	1,000	20,000
C9-C10 Aromatics	ND	ND	ND	ND	ND	ND	4000	5,000	4,000
Benzene	ND	ND	ND	ND	ND	ND	2000	2,000	7,000
Toluene	ND	ND	ND	ND	ND	ND	6000	6,000	50,000
Ethylbenzene	ND	3.8	ND	ND	ND	ND	4000	30,000	4,000
Total Xylenes	ND	ND	ND	ND	ND	ND	6000	6,000	50,000
Methyl Tertiary Butyl Ether (MTBE)	ND	ND	ND	ND	ND	ND	50000	50,000	50,000
Naphthalene	ND	ND	ND	ND	ND	ND	6000	6,000	6,000

All results are in micrograms per liter (ug/L).  
ND Not detected above laboratory detection limit.  
Exceeds Method 1 - Risk Characterization Category GW-2.



LEGEND:

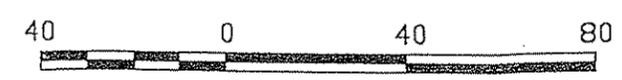
- OBSERVATION WELL
- MONITORING WELL
- DUMPSTER
- CATCH BASIN

- MONITORING WELL IDENTIFICATION
- TOP OF CASING ELEVATION (FEET)
- GROUND WATER SURFACE ELEVATION (FEET)
- GAUGING DATE
- INFERRED GROUND WATER FLOW DIRECTION
- POTENTIOMETRIC CONTOUR LINE WITH ELEVATION IN FEET

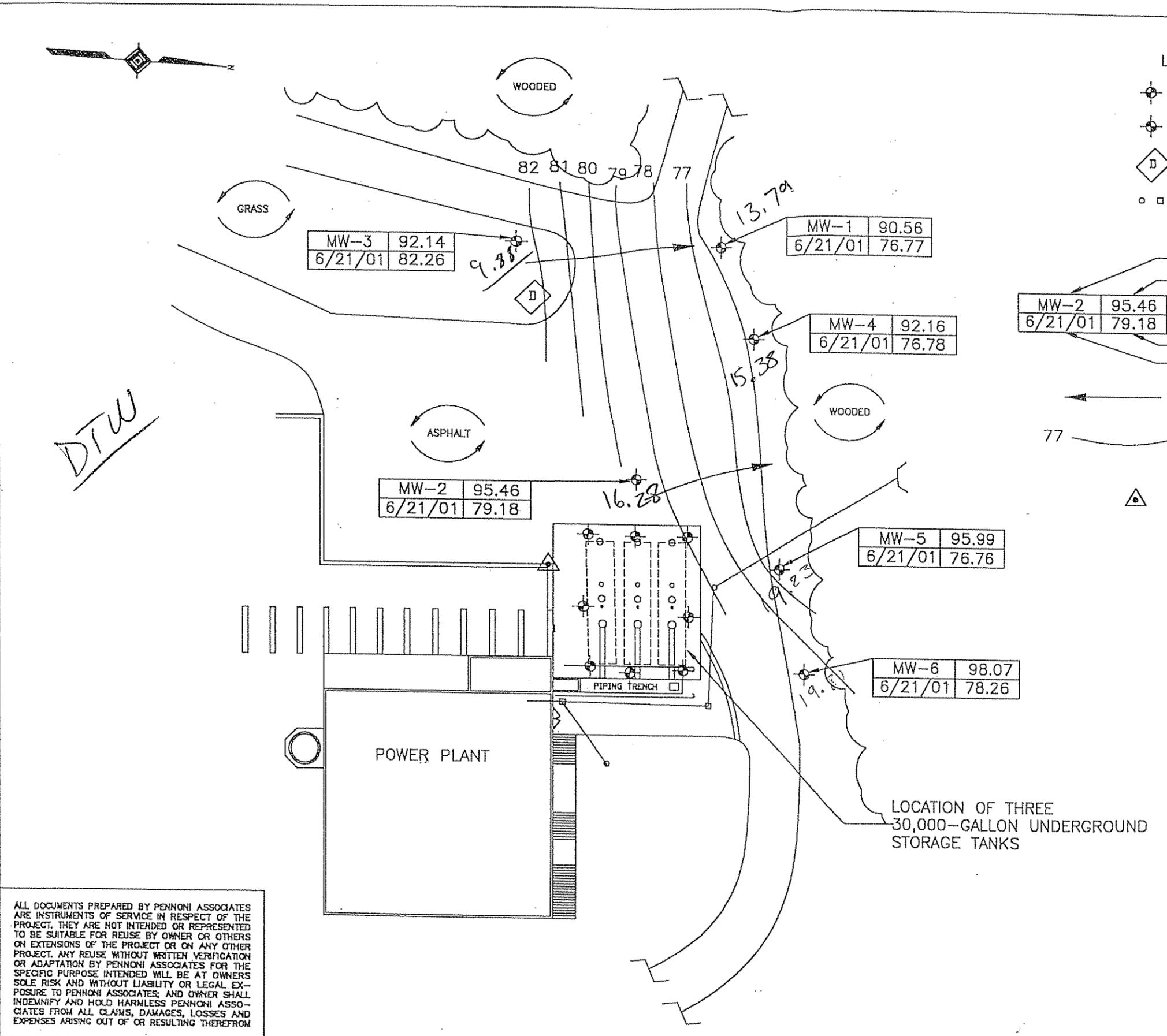


BENCH MARK  
 ALL ELEVATIONS ON THIS PLAN ARE RELATIVE TO AN ASSUMED ELEVATION OF 100.00 FEET MEASURED AT THE TOP OF A BOLT SET INTO THE TOP OF THE CONCRETE RETAINING WALL AT THE LOCATION SHOWN

GRAPHIC SCALE



( IN FEET )  
 1 inch = 40 feet



MW-3	92.14
6/21/01	82.26

MW-1	90.56
6/21/01	76.77

MW-4	92.16
6/21/01	76.78

MW-2	95.46
6/21/01	79.18

MW-5	95.99
6/21/01	76.76

MW-6	98.07
6/21/01	78.26

MW-2	95.46
6/21/01	79.18

*DTW*

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM

PIEZOMETRIC HEAD ELEVATION PLAN  
 JUNE 21, 2001

LOCATION  
 45 HOSPITAL ROAD, MEDFIELD, MA

CLIENT  
 MASSACHUSETTS DEPARTMENT OF MENTAL HEALTH

SCALE 1" = 40'	SHEET 1/1	PAJ PROJECT NO. DOMH0101
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DRAWN BY PWL	APPROVED BY JMcc	DATE 8/09/01	DRAW NO. SITEPLAN.DWG
-----------------	---------------------	-----------------	--------------------------

PENNONI ASSOCIATES INC.  
 THE CONCORD CENTER, SUITE 434, 10 FERRY ST.  
 UNIT 6, CONCORD, NH 03301

## 6.0 PERMITS

An extension to an existing Order of Conditions was filed and approved by the Medfield Conservation Commission on May 17, 2001 and is effective until May 31, 2002. No other permits, other than DEP approval of the IRA Plan, are applicable to the investigation phase of the IRA. The Medfield Fire Department has been appraised of the site conditions. A permit was obtained from the Fire Department for the closure of the USTs in-place.

## 7.0 SCHEDULE

IRA activities have been ongoing at the disposal site since June 15, 2001, immediately following verbal IRA approval from the DEP. The subsurface investigation will be conducted on the disposal site in 2001 to evaluate the vertical and horizontal extent of contamination. Any remediation, if required, will be described in an addendum to this IRA Plan, or will be conducted as a Release Abatement Measure or Comprehensive Response Action. As required by DEP, an IRA Completion Report, for the assessment or for the addendum for remedial action, will be submitted within 10 months of the release notification (June 15, 2001).

## 8.0 REMEDIATION WASTE

Any remediation waste generated during IRA activities will be disposed of at an off-site licensed facility in accordance with all federal, state and local regulations. Remediation waste has not been generated as of the date of this IRA Plan.

## 9.0 LIMITATIONS

All documents prepared by Pennoni Associates Inc. are instruments of service in respect of the project. They are not intended or represented to be suitable for the reuse by owner or others on extensions of the project or on any other project. Any reuse without written verification or adaptation by Pennoni Associates Inc. for the specific purpose intended will be at the owner's sole risk and without liability or legal exposure to Pennoni Associates Inc.; and owner shall indemnify and hold harmless Pennoni Associates Inc. from all claims, damages, losses and expenses arising out of or resulting therefrom.

## Appendix A

### Laboratory Reports



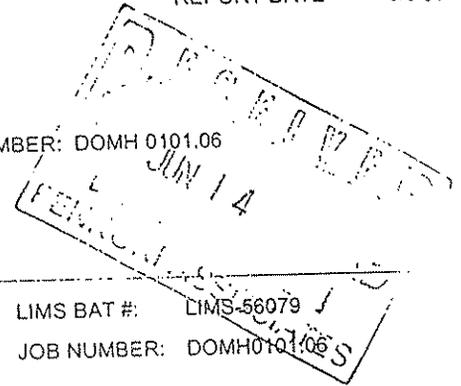
**con-test**<sup>®</sup>  
ANALYTICAL LABORATORY

39 Spruce Street ° 2nd Floor ° East Longmeadow, MA 01028 ° FAX 413/525-6405 ° TEL. 413/525-2332

REPORT DATE 6/6 01

PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301  
ATTN: JEFF MCCULLOUGH

CONTRACT NUMBER:  
PURCHASE ORDER NUMBER: DOMH 0101.06  
PROJECT NUMBER:



ANALYTICAL SUMMARY

LIMS BAT #: LIMS-56079  
JOB NUMBER: DOMH0101.06

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: MEDFIELD STATE HOSPITAL

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST
*T-2W	01B15119	SOIL	TANK 2 WEST END	eph - solid
*T-2W	01B15119	SOIL	TANK 2 WEST END	solids eph/vph
*T-2W	01B15119	SOIL	TANK 2 WEST END	vph - solid
T-3E	01B15120	SOIL	TANK 3 EAST	eph - solid
T-3E	01B15120	SOIL	TANK 3 EAST	solids eph/vph
T-3E	01B15120	SOIL	TANK 3 EAST	vph - solid
T-3W	01B15121	SOIL	TANK 3 WEST	eph - solid
T-3W	01B15121	SOIL	TANK 3 WEST	solids eph/vph
T-3W	01B15121	SOIL	TANK 3 WEST	vph - solid

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations :

AIHA 100033	AIHA ELLAP (LEAD) 100033
MASSACHUSETTS MA0100	NEW HAMPSHIRE 2516
CONNECTICUT PH-0567	VERMONT DOH (LEAD) No. LL015036
NEW YORK ELAP 10899	RHODE ISLAND (LIC. No. 112)

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 6/6/07  
SIGNATURE DATE

Tod Kopyscinski  
Director of Operations

Edward Denson  
Technical Director

\* See end of data labulation for notes and comments pertaining to this sample





JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/6/01  
Page 2 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL  
Date Received: 6/1/01  
Field Sample #: T-2W

LIMS-BAT #: LIMS-56079  
Job Number: DOMH0101.06

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK CONTRIBUTION FROM THE SUMMED RANGES AND EXTRACTION BY PRESSURIZED FLUID EXTRACTION (SW846 3545) (ASE).

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.

\* = See end of report for comments and notes applying to this sample



39 Spruce Street \* 2nd Floor \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

6/6/01  
 Page 3 of 11

Purchase Order No.: DOMH 0101.06

LIMS-BAT #: LIMS-56079  
 Job Number: DOMH0101.06

Project Location: MEDFIELD STATE HOSPITAL  
 Date Received: 6/1/01  
 Field Sample #: T-3E  
 Sample ID: 01B15120  
 Sample Matrix: SOIL

Sampled: 6/1/01  
 TANK 3 EAST

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	mg/kg dry wt.	1680.	06/05/01	KKP	937.			
C19-C36 Aliphatics	mg/kg dry wt.	7150.	06/05/01	KKP	99.4			
C11-C22 Aromatics	mg/kg dry wt.	7250.	06/05/01	KKP	528.			
Acenaphthene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Acenaphthylene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Anthracene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(a)anthracene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(a)pyrene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(b)fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(g,h,i)perylene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(k)fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Chrysene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Dibenzo(a,h)anthracene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Fluorene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Indeno(1,2,3-cd)pyrene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
2-Methylnaphthalene	mg/kg dry wt.	74.6	06/05/01	KKP	25.9			
Naphthalene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Phenanthrene	mg/kg dry wt.	35.2	06/05/01	KKP	25.9			
Pyrene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Date Extracted EPH Solid		6/4/2001	06/05/01	KKP				

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 NM = Not Measured

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\* = See end of report for comments and notes applying to this sample



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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/6/01  
Page 4 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL  
Date Received: 6/1/01  
Field Sample #: T-3E

LIMS-BAT #: LIMS-56079  
Job Number: DOMH0101.06

Analytical Method:  
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK CONTRIBUTION FROM THE SUMMED RANGES AND EXTRACTION BY PRESSURIZED FLUID EXTRACTION (SW846 3545) (ASE).

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit  
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\* = See end of report for comments and notes applying to this sample





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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/6/01  
Page 6 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL  
Date Received: 6/1/01  
Field Sample #: T-3W

LIMS-BAT #: LIMS-56079  
Job Number: DOMH0101.06

Analytical Method:  
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK CONTRIBUTION FROM THE SUMMED RANGES AND EXTRACTION BY PRESSURIZED FLUID EXTRACTION (SW846 3545) (ASE).

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit  
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\* = See end of report for comments and notes applying to this sample







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JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

6/6/01  
 Page 9 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL  
 Date Received: 6/1/01  
 Field Sample #: T-3E  
 Sample ID: 01B15120  
 Sample Matrix: SOIL

LIMS-BAT #: LIMS-56079  
 Job Number: DOMH0101.06

Sampled: 6/1/01  
 TANK 3 EAST

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/kg dry wt.	62000.	06/05/01	KKP	61000.			
C9-C12 Aliphatics	ug/kg dry wt.	334000.	06/05/01	KKP	21800.			
C9-C10 Aromatics	ug/kg dry wt.	240000.	06/05/01	KKP	18600.			
Benzene	ug/kg dry wt.	ND	06/05/01	KKP	110.			
Ethylbenzene	ug/kg dry wt.	1000.	06/05/01	KKP	110.			
MTBE	ug/kg dry wt.	ND	06/05/01	KKP	270.			
Naphthalene	ug/kg dry wt.	20800.	06/05/01	KKP	108.			
Toluene	ug/kg dry wt.	ND	06/05/01	KKP	320.			
m/p-Xylene	ug/kg dry wt.	5000.	06/05/01	KKP	380.			
o-Xylene	ug/kg dry wt.	3100.	06/05/01	KKP	220.			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE PRESERVED WITH METHANOL AND CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

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 ND = Not Detected  
 NM = Not Measured

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.

\* = See end of report for comments and notes applying to this sample





**con-test\***  
ANALYTICAL LABORATORY

39 Spruce Street \* 2nd Floor \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

Purchase Order No.: DOMH 0101.06

6/6/01  
Page 11 of 11

Project Location: MEDFIELD STATE HOSPITAL  
Date Received: 6/1/01

LIMS-BAT #: LIMS-56079  
Job Number: DOMH0101.06

The following notes were attached to the reported analysis :

Sample ID: \* 01B15119 - 01B15121  
Analysis: eph - solid  
Required QC not performed for all EPH samples.

\*\* END OF REPORT \*\*

RL = Reporting Limit

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NM = Not Measured

\* = See end of report for comments and notes applying to this sample

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.  
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates  
Standard Reference Materials and Duplicates  
Method Blanks

Report Date: 6/6/01 Lims Bat #: LIMS-56079 Page 1 of 4

QC Batch Number: GC/FID-5195

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B15119	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	97.9	%	70-130
01B15120	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	80.0	%	70-130
01B15121	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	110.0	%	70-130
BLANK-33864	C5-C8 Aliphatics	Blank	<6020.	ug/kg dry wt.	
	C9-C12 Aliphatics	Blank	<2160.	ug/kg dry wt.	



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QC SUMMARY REPORT

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Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates  
Standard Reference Materials and Duplicates  
Method Blanks

Report Date: 6/6/01 Lims Bat #: LIMS-56079 Page 2 of 4  
QC Batch Number: GC/FID-5198

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B15119	2-Fluorobiphenyl	Surrogate Recovery	79.2	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	80.4	%	40-140
	Chlorooctadecane	Sur. Recovery	72.0	%	40-140
	Terphenyl	Sur. Recovery	90.0	%	40-140
01B15120	2-Fluorobiphenyl	Surrogate Recovery	91.4	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	92.2	%	40-140
	Chlorooctadecane	Sur. Recovery	80.0	%	40-140
	Terphenyl	Sur. Recovery	82.5	%	40-140
01B15121	2-Fluorobiphenyl	Surrogate Recovery	41.8	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	90.0	%	40-140
	Chlorooctadecane	Sur. Recovery	100.0	%	40-140
	Terphenyl	Sur. Recovery	100.0	%	40-140
BLANK-33876	Naphthalene	Blank	<0.5	mg/kg dry wt.	
	Acenaphthene	Blank	<0.5	mg/kg dry wt.	
	Acenaphthylene	Blank	<0.5	mg/kg dry wt.	
	Anthracene	Blank	<0.5	mg/kg dry wt.	
	Benzo(a)anthracene	Blank	<0.5	mg/kg dry wt.	
	Benzo(a)pyrene	Blank	<0.5	mg/kg dry wt.	
	Benzo(b)fluoranthene	Blank	<0.5	mg/kg dry wt.	
	Benzo(g,h,i)perylene	Blank	<0.5	mg/kg dry wt.	
	Chrysene	Blank	<0.5	mg/kg dry wt.	
	Dibenzo(a,h)anthracene	Blank	<0.5	mg/kg dry wt.	
	Fluoranthene	Blank	<0.5	mg/kg dry wt.	
	Fluorene	Blank	<0.5	mg/kg dry wt.	
	Indeno(1,2,3-cd)pyrene	Blank	<0.5	mg/kg dry wt.	
	2-Methylnaphthalene	Blank	<0.5	mg/kg dry wt.	
	Phenanthrene	Blank	<0.5	mg/kg dry wt.	
	Pyrene	Blank	<0.5	mg/kg dry wt.	
	Benzo(k)fluoranthene	Blank	<0.5	mg/kg dry wt.	
C9-C18 Aliphatics	Blank	<18.1	mg/kg dry wt.		
C19-C36 Aliphatics	Blank	6.9	mg/kg dry wt.		
C11-C22 Aromatics	Blank	<10.2	mg/kg dry wt.		



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.  
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates  
Standard Reference Materials and Duplicates  
Method Blanks

Report Date: 6/6/01 Lims Bat #: LIMS-56079 Page 3 of 4  
QC Batch Number: GC/PID-4379

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B15119	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	113.3	%	70-130
01B15120	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	90.0	%	70-130
01B15121	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	104.2	%	70-130
BLANK-33863	Benzene	Blank	<11.	ug/kg dry wt.	
	Ethylbenzene	Blank	<11.	ug/kg dry wt.	
	Naphthalene	Blank	<10.7	ug/kg dry wt.	
	Toluene	Blank	<32.	ug/kg dry wt.	
	o-Xylene	Blank	<21.	ug/kg dry wt.	
	m/p-Xylene	Blank	<37.	ug/kg dry wt.	
	C9-C10 Aromatics	Blank	<1840.	ug/kg dry wt.	
	MTBE	Blank	<27.	ug/kg dry wt.	
LFBLANK-16298	Benzene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3707.5	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	111.2	%	70-130
	Ethylbenzene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3259.6	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	97.8	%	70-130
	Naphthalene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3106.6	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	93.2	%	70-130
	Toluene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3588.4	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	107.7	%	70-130
	o-Xylene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3509.1	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	105.3	%	70-130
	m/p-Xylene	Lab Fort Blank Amt.	6689.3	ug/kg dry wt.	
		Lab Fort Blk. Found	6519.3	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	97.5	%	70-130
	MTBE	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3713.2	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	111.4	%	70-130



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QC SUMMARY REPORT

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Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates  
Standard Reference Materials and Duplicates  
Method Blanks

Report Date:

6/6/01

Lims Bat #: LIMS-56079

Page 4 of 4

QUALITY CONTROL DEFINITIONS AND ABBREVIATIONS

QC BATCH NUMBER This is the number assigned to all samples analyzed together that would be subject to comparison with a particular set of Quality Control Data.

LIMITS Upper and Lower Control Limits for the QC ANALYSIS Reported. All values normally would fall within these statistically determined limits, unless there is an unusual circumstance that would be documented in a NOTE appearing on the last page of the QC SUMMARY REPORT. Not all QC results will have Limits defined.

Sample Amount Amount of analyte found in a sample.

Blank Method Blank that has been taken though all the steps of the analysis.

LFBLANK Laboratory Fortified Blank (a control sample)

STDADD Standard Added (a laboratory control sample)

Matrix Spk Amt Added Amount of analyte spiked into a sample  
MS Amt Measured Amount of analyte found including amount that was spiked  
Matrix Spike % Rec. % Recovery of spiked amount in sample.

Duplicate Value The result from the Duplicate analysis of the sample.  
Duplicate RPD The Relative Percent Difference between two Duplicate Analyses.

Surrogate Recovery The % Recovery for non-environmental compounds (surrogates) spiked into samples to determine the performance of the analytical methods.

Sur. Recovery (ELCD) Surrogate Recovery on the Electrolytic Conductivity Detector.  
Sur. Recovery (PID) Surrogate Recovery on the Photoionization Detector.

Standard Measured Amount measured for a laboratory control sample  
Standard Amt Added Known value for a laboratory control sample  
Standard % Recovery % recovered for a laboratory control sample with a known value.

Lab Fort Blank Amt Laboratory Fortified Blank Amount Added  
Lab Fort Blk. Found Laboratory Fortified Blank Amount Found  
Lab Fort Blk % Rec Laboratory Fortified Blank % Recovered  
Dup Lab Fort Bl Amt Duplicate Laboratory Fortified Blank Amount Added  
Dup Lab Fort Bl Fnd Duplicate Laboratory Fortified Blank Amount Found  
Dup Lab Fort Bl % Rec Duplicate Laboratory Fortified Blank % Recovery  
Lab Fort Blank Range Laboratory Fortified Blank Range (Absolute value of difference between recoveries for Lab Fortified Blank and Lab Fortified Blank Duplicate).

Lab Fort Bl. Av. Rec. Laboratory Fortified Blank Average Recovery

Duplicate Sample Amt Sample Value for Duplicate used with Matrix Spike Duplicate  
MSD Amount Added Matrix Spike Duplicate Amount Added (Spiked)  
MSD Amt Measured Matrix Spike Duplicate Amount Measured  
MSD % Recovery Matrix Spike Duplicate % Recovery  
MSD Range Absolute difference between Matrix Spike and Matrix Spike Duplicate Recoveries





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REPORT DATE 6/15/07

PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301  
ATTN: JEFF MCCULLOUGH

CONTRACT NUMBER:  
PURCHASE ORDER NUMBER: DOMH 0101.06

PROJECT NUMBER:

ANALYTICAL SUMMARY

LIMS.BAT.# LIMS-56155  
JOB NUMBER: DOMH 0101.06

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: MEDFIELD STATE HOSPITAL

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST
T-2W	01B15513	SOIL	TANK 2 WEST END	eph - solid
T-3E	01B15514	SOIL	TANK 3 EAST	eph - solid
T-3W	01B15515	SOIL	TANK 3 WEST	eph - solid

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations :

AIHA 100033	AIHA ELLAP (LEAD) 100033
MASSACHUSETTS MA0100	NEW HAMPSHIRE 2516
CONNECTICUT PH-0567	VERMONT DOH (LEAD) No. LL015036
NEW YORK ELAP 10899	RHODE ISLAND (LIC. No. 112)

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 6/15/07

SIGNATURE

DATE

Tod Kopyscinski  
Director of Operations

Edward Denson  
Technical Director





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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

Purchase Order No.: DOMH 0101.06

6/15/01  
Page 2 of 7

Project Location: MEDFIELD STATE HOSPITAL  
Date Received: 6/6/01  
Field Sample #: T-2W

LIMS-BAT #: LIMS-56155  
Job Number: DOMH 0101.06

Analytical Method:  
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK CONTRIBUTION FROM THE SUMMED RANGES AND EXTRACTION BY PRESSURIZED FLUID EXTRACTION (SW846 3545) (ASE).

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/15/01  
Page 4 of 7

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL  
Date Received: 6/6/01  
Field Sample #: T-3E

LIMS-BAT #: LIMS-56155  
Job Number: DOMH 0101.06

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

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JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

6/15/01  
 Page 5 of 7

Purchase Order No.: DOMH 0101.06

LIMS-BAT #: LIMS-56155  
 Job Number: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL  
 Date Received: 6/6/01  
 Field Sample #: T-3W  
 Sample ID: 01B15515  
 Sample Matrix: SOIL

Sampled: 6/1/01  
 TANK 3 WEST

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P / F
						Lo	Hi	
C9-C18 Aliphatics	mg/kg dry wt.	428.	06/14/01	KKP	369.			
C19-C36 Aliphatics	mg/kg dry wt.	1990.	06/14/01	KKP	39.1			
C11-C22 Aromatics	mg/kg dry wt.	2220.	06/14/01	KKP	208.			
Acenaphthene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Acenaphthylene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Anthracene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(a)anthracene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(a)pyrene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(b)fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(g,h,i)perylene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(k)fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Chrysene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Dibenzo(a,h)anthracene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Fluorene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Indeno(1,2,3-cd)pyrene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
2-Methylnaphthalene	mg/kg dry wt.	17.1	06/14/01	KKP	10.2			
Naphthalene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Phenanthrene	mg/kg dry wt.	10.6	06/14/01	KKP	10.2			
Pyrene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Date Extracted EPH Solid		6/7/2001	06/14/01	KKP				

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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/15/01  
Page 6 of 7

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL  
Date Received: 6/6/01  
Field Sample #: T-3W

LIMS-BAT #: LIMS-56155  
Job Number: DOMH 0101.06

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

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YES  NO

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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

Purchase Order No.: DOMH 0101.06

6/15/01  
Page 7 of 7

Project Location: MEDFIELD STATE HOSPITAL  
Date Received: 6/6/01

LIMS-BAT #: LIMS-56155  
Job Number: DOMH 0101.06

\*\* END OF REPORT \*\*

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\* = See end of report for comments and notes applying to this sample



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.  
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates  
Standard Reference Materials and Duplicates  
Method Blanks

Report Date: 6/15/01 Lims Bat #: LIMS-56155 Page 1 of 4

QC Batch Number: GC/FID-5248

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B15513	2-Fluorobiphenyl	Surrogate Recovery	100.0	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	81.6	%	40-140
	Chlorooctadecane	Sur. Recovery	78.0	%	40-140
	Terphenyl	Sur. Recovery	100.0	%	40-140
01B15514	2-Fluorobiphenyl	Surrogate Recovery	99.6	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	72.0	%	40-140
	Chlorooctadecane	Sur. Recovery	0.0	%	40-140
	Terphenyl	Sur. Recovery	0.0	%	40-140
01B15515	2-Fluorobiphenyl	Surrogate Recovery	99.6	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	81.6	%	40-140
	Chlorooctadecane	Sur. Recovery	64.0	%	40-140
	Terphenyl	Sur. Recovery	99.0	%	40-140
BLANK-34071	Naphthalene	Blank	<0.5	mg/kg dry wt.	
	Acenaphthene	Blank	<0.5	mg/kg dry wt.	
	Acenaphthylene	Blank	<0.5	mg/kg dry wt.	
	Anthracene	Blank	<0.5	mg/kg dry wt.	
	Benzo(a)anthracene	Blank	<0.5	mg/kg dry wt.	
	Benzo(a)pyrene	Blank	<0.5	mg/kg dry wt.	
	Benzo(b)fluoranthene	Blank	<0.5	mg/kg dry wt.	
	Benzo(g,h,i)perylene	Blank	<0.5	mg/kg dry wt.	
	Chrysene	Blank	<0.5	mg/kg dry wt.	
	Dibenzo(a,h)anthracene	Blank	<0.5	mg/kg dry wt.	
	Fluoranthene	Blank	<0.5	mg/kg dry wt.	
	Fluorene	Blank	<0.5	mg/kg dry wt.	
	Indeno(1,2,3-cd)pyrene	Blank	<0.5	mg/kg dry wt.	
	2-Methylnaphthalene	Blank	<0.5	mg/kg dry wt.	
	Phenanthrene	Blank	<0.5	mg/kg dry wt.	
	Pyrene	Blank	<0.5	mg/kg dry wt.	
	Benzo(k)fluoranthene	Blank	<0.5	mg/kg dry wt.	
	C9-C18 Aliphatics	Blank	<18.1	mg/kg dry wt.	
	C19-C36 Aliphatics	Blank	7.0	mg/kg dry wt.	
	C11-C22 Aromatics	Blank	<10.2	mg/kg dry wt.	
LFBLANK-16429	Naphthalene	Lab Fort Blank Amt.	2.5	mg/kg dry wt.	
		Lab Fort Blk. Found	1.8	mg/kg dry wt.	
		Lab Fort Blk. % Rec.	70.8	%	40-140
	Acenaphthene	Lab Fort Blank Amt.	2.5	mg/kg dry wt.	
		Lab Fort Blk. Found	2.1	mg/kg dry wt.	
		Lab Fort Blk. % Rec.	84.8	%	40-140
	Anthracene	Lab Fort Blank Amt.	2.5	mg/kg dry wt.	



QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.  
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates  
Standard Reference Materials and Duplicates  
Method Blanks

Report Date: 6/15/01 Lims Bat #: LIMS-56155 Page 2 of 4  
QC Batch Number: GC/FID-5248

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-16429	Anthracene	Lab Fort Blk. Found	2.5	mg/kg dry wt.	
		Lab Fort Blk. % Rec.	101.6	%	40-140
	Chrysene	Lab Fort Blank Amt.	2.5	mg/kg dry wt.	
		Lab Fort Blk. Found	2.4	mg/kg dry wt.	
	Pyrene	Lab Fort Blk. % Rec.	97.2	%	40-140
		Lab Fort Blank Amt.	2.5	mg/kg dry wt.	
		Lab Fort Blk. Found	2.5	mg/kg dry wt.	
		Lab Fort Blk. % Rec.	98.4	%	40-140



QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.  
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates  
Standard Reference Materials and Duplicates  
Method Blanks

Report Date: 6/15/01 Lims Bat #: LIMS-56155 Page 3 of 4

NOTES:

QC Batch No. : GC/FID-5248  
Sample ID : 01B15514  
Analysis : Chlorooctadecane

SURROGATE CONCENTRATION BELOW DETECTION LIMIT DUE TO DILUTION REQUIRED FOR SAMPLE ANALYSIS.

QC Batch No. : GC/FID-5248  
Sample ID : 01B15514  
Analysis : Terphenyl

SURROGATE CONCENTRATION BELOW DETECTION LIMIT DUE TO DILUTION REQUIRED FOR SAMPLE ANALYSIS.



QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.  
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates  
Standard Reference Materials and Duplicates  
Method Blanks

Report Date: 6/15/01 Lims Bat #: LIMS-56155 Page 4 of 4

QUALITY CONTROL DEFINITIONS AND ABBREVIATIONS

- QC BATCH NUMBER This is the number assigned to all samples analyzed together that would be subject to comparison with a particular set of Quality Control Data.
- LIMITS Upper and Lower Control Limits for the QC ANALYSIS Reported. All values normally would fall within these statistically determined limits, unless there is an unusual circumstance that would be documented in a NOTE appearing on the last page of the QC SUMMARY REPORT. Not all QC results will have Limits defined.
- Sample Amount Amount of analyte found in a sample.
- Blank Method Blank that has been taken though all the steps of the analysis.
- LFBLANK Laboratory Fortified Blank (a control sample)
- STDADD Standard Added (a laboratory control sample)
- Matrix Spk Amt Added Amount of analyte spiked into a sample  
MS Amt Measured Amount of analyte found including amount that was spiked  
Matrix Spike % Rec. % Recovery of spiked amount in sample.
- Duplicate Value The result from the Duplicate analysis of the sample.  
Duplicate RPD The Relative Percent Difference between two Duplicate Analyses.
- Surrogate Recovery The % Recovery for non-environmental compounds (surrogates) spiked into samples to determine the performance of the analytical methods.
- Sur. Recovery (ELCD) Surrogate Recovery on the Electrolytic Conductivity Detector.  
Sur. Recovery (PID) Surrogate Recovery on the Photoionization Detector.
- Standard Measured Amount measured for a laboratory control sample  
Standard Amt Added Known value for a laboratory control sample  
Standard % Recovery % recovered for a laboratory control sample with a known value.
- Lab Fort Blank Amt Laboratory Fortified Blank Amount Added  
Lab Fort Blk. Found Laboratory Fortified Blank Amount Found  
Lab Fort Blk % Rec Laboratory Fortified Blank % Recovered  
Dup Lab Fort Bl Amt Duplicate Laboratory Fortified Blank Amount Added  
Dup Lab Fort Bl Fnd Duplicate Laboratory Fortified Blank Amount Found  
Dup Lab Fort Bl % Rec Duplicate Laboratory Fortified Blank % Recovery  
Lab Fort Blank Range Laboratory Fortified Blank Range (Absolute value of difference between recoveries for Lab Fortified Blank and Lab Fortified Blank Duplicate).
- Lab Fort Bl. Av. Rec. Laboratory Fortified Blank Average Recovery
- Duplicate Sample Amt Sample Value for Duplicate used with Matrix Spike Duplicate  
MSD Amount Added Matrix Spike Duplicate Amount Added (Spiked)  
MSD Amt Measured Matrix Spike Duplicate Amount Measured  
MSD % Recovery Matrix Spike Duplicate % Recovery  
MSD Range Absolute difference between Matrix Spike and Matrix Spike Duplicate Recoveries





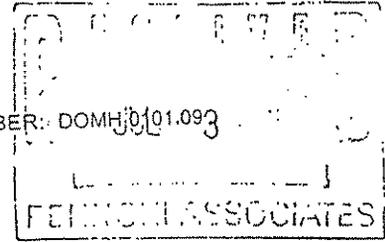
**con-test**  
ANALYTICAL LABORATORY

39 Spruce Street \* 2nd Floor \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

REPORT DATE 6/28/01

PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301  
ATTN: JEFF MCCULLOUGH

CONTRACT NUMBER:  
PURCHASE ORDER NUMBER: DOMH0101.093  
PROJECT NUMBER:



ANALYTICAL SUMMARY

LIMS BAT #: LIMS-56545  
JOB NUMBER: DOMH 0101.09

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: MEDFIELD STATE HOSPITAL POWER PLANT

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST
MW-01	01B17120	GRND WATER	NOT SPECIFIED	eph - water
MW-01	01B17120	GRND WATER	NOT SPECIFIED	vph - water
MW-02	01B17121	GRND WATER	NOT SPECIFIED	eph - water
MW-02	01B17121	GRND WATER	NOT SPECIFIED	vph - water
MW-03	01B17122	GRND WATER	NOT SPECIFIED	eph - water
MW-03	01B17122	GRND WATER	NOT SPECIFIED	vph - water
MW-04	01B17123	GRND WATER	NOT SPECIFIED	eph - water
MW-04	01B17123	GRND WATER	NOT SPECIFIED	vph - water
MW-05	01B17124	GRND WATER	NOT SPECIFIED	eph - water
MW-05	01B17124	GRND WATER	NOT SPECIFIED	vph - water
MW-06	01B17125	GRND WATER	NOT SPECIFIED	eph - water
MW-06	01B17125	GRND WATER	NOT SPECIFIED	vph - water

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations :

AIHA 100033	AIHA ELLAP (LEAD) 100033
MASSACHUSETTS MA0100	NEW HAMPSHIRE 2516
CONNECTICUT PH-0567	VERMONT DOH (LEAD) No. LL015036
NEW YORK ELAP 10899	RHODE ISLAND (LIC. No. 112)

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 6/28/01  
SIGNATURE DATE

Tod Kopyscinski  
Director of Operations

Edward Denson  
Technical Director



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JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01  
 Page 1 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
 Date Received: 6/21/01  
 Field Sample #: MW-01

LIMS-BAT #: LIMS-56545  
 Job Number: DOMH 0101.09

Sample ID: 01B17120  
 Sampled: 6/21/01  
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	ND	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	ND	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

RL = Reporting Limit  
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\* = See end of report for comments and notes applying to this sample



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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/28/01  
Page 2 of 19

Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
Date Received: 6/21/01  
Field Sample #: MW-01

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

Analytical Method:  
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).  
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND  
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS  
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22  
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND  
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND  
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES  
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED  
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK  
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES  
ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR  
ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

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JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

6/28/01  
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Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
 Date Received: 6/21/01  
 Field Sample #: MW-02  
 Sample ID: 01B17121

LIMS-BAT #: LIMS-56545  
 Job Number: DOMH 0101.09

Sampled: 6/21/01  
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	154.	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	548.	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	574.	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/28/01  
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Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
Date Received: 6/21/01  
Field Sample #: MW-02

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).  
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND  
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS  
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22  
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND  
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND  
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES  
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED  
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK  
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES  
ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR  
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JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

6/28/01  
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Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT

LIMS-BAT #: LIMS-56545  
 Job Number: DOMH 0101.09

Date Received: 6/21/01

Field Sample #: MW-03

Sample ID: 01B17122

Sampled: 6/21/01  
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	99.0	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	86.4	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/28/01  
Page 6 of 19

Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
Date Received: 6/21/01  
Field Sample #: MW-03

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).  
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND  
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS  
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22  
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND  
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND  
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES  
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ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK  
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES  
ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR  
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JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01  
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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
 Date Received: 6/21/01  
 Field Sample #: MW-04  
 Sample ID: 01B17123

LIMS-BAT #: LIMS-56545  
 Job Number: DOMH 0101.09

Sampled: 6/21/01  
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	128.	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	61.4	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

RL = Reporting Limit  
 ND = Not Detected  
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\* = See end of report for comments and notes applying to this sample



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PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

6/28/01  
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Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
Date Received: 6/21/01  
Field Sample #: MW-04

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).  
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND  
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS  
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22  
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND  
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND  
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES  
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED  
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK  
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES  
ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR  
ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

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determine PASS (P) or FAIL (F) condition of results.



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JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

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Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
 Date Received: 6/21/01  
 Field Sample #: MW-05  
 Sample ID: 01B17124

LIMS-BAT #: LIMS-56545  
 Job Number: DOMH 0101.09

Sampled: 6/21/01  
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	ND	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	ND	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

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Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
Date Received: 6/21/01  
Field Sample #: MW-05

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).  
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND  
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS  
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22  
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND  
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND  
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES  
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED  
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK  
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES  
ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR  
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JEFF MCCULLOUGH  
 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
 Date Received: 6/21/01  
 Field Sample #: MW-06  
 Sample ID: 01B17125

LIMS-BAT #: LIMS-56545  
 Job Number: DOMH 0101.09

Sampled: 6/21/01  
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/ F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	ND	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	ND	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
Date Received: 6/21/01  
Field Sample #: MW-06

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

Analytical Method:  
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).  
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND  
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS  
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22  
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND  
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND  
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES  
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED  
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK  
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES  
ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR  
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JEFF MCCULLOUGH  
PENNONI ASSOCIATES  
THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
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Purchase Order No.: DOMH 0101.09

6/28/01  
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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

Date Received: 6/21/01

Field Sample #: MW-01

Sample ID: 01B17120

Sampled: 6/21/01  
NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/F
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0		
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0		
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0		
Benzene	ug/l	ND	06/27/01	KKP	0.3		
Ethyl Benzene	ug/l	ND	06/27/01	KKP	0.4		
MTBE	ug/l	ND	06/27/01	KKP	2.1		
Naphthalene	ug/l	ND	06/27/01	KKP	3.2		
Toluene	ug/l	ND	06/27/01	KKP	1.9		
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7		
o-Xylene	ug/l	ND	06/27/01	KKP	1.0		

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES  NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

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THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
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Purchase Order No.: DOMH 0101.09

6/28/01  
Page 14 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
Date Received: 6/21/01  
Field Sample #: MW-02

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

Sample ID: 01B17121  
Sample Matrix: GRND WATER  
Sampled: 6/21/01  
NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0			
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0			
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0			
Benzene	ug/l	ND	06/27/01	KKP	0.3			
Ethyl Benzene	ug/l	3.8	06/27/01	KKP	0.4			
MTBE	ug/l	ND	06/27/01	KKP	2.1			
Naphthalene	ug/l	ND	06/27/01	KKP	3.2			
Toluene	ug/l	ND	06/27/01	KKP	1.9			
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7			
o-Xylene	ug/l	ND	06/27/01	KKP	1.0			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES  NO

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 PENNONI ASSOCIATES  
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6/28/01  
 Page 16 of 19

Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
 Date Received: 6/21/01  
 Field Sample #: MW-04  
 Sample ID: 01B17123  
 Sample Matrix: GRND WATER

LIMS-BAT #: LIMS-56545  
 Job Number: DOMH 0101.09

Sampled: 6/21/01  
 NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0			
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0			
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0			
Benzene	ug/l	ND	06/27/01	KKP	0.3			
Ethyl Benzene	ug/l	ND	06/27/01	KKP	0.4			
MTBE	ug/l	ND	06/27/01	KKP	2.1			
Naphthalene	ug/l	ND	06/27/01	KKP	3.2			
Toluene	ug/l	ND	06/27/01	KKP	1.9			
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7			
o-Xylene	ug/l	ND	06/27/01	KKP	1.0			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES  NO

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 PENNONI ASSOCIATES  
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
 CONCORD, NH 03301

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
 Date Received: 6/21/01  
 Field Sample #: MW-06

Purchase Order No.: DOMH 0101.09

LIMS-BAT #: LIMS-56545  
 Job Number: DOMH 0101.09

Sample ID: 01B17125  
 Sampled: 6/21/01  
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/F
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0		
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0		
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0		
Benzene	ug/l	ND	06/27/01	KKP	0.3		
Ethyl Benzene	ug/l	ND	06/27/01	KKP	0.4		
MTBE	ug/l	ND	06/27/01	KKP	2.1		
Naphthalene	ug/l	ND	06/27/01	KKP	3.2		
Toluene	ug/l	ND	06/27/01	KKP	1.9		
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7		
o-Xylene	ug/l	ND	06/27/01	KKP	1.0		

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES  NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

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THE CONCORD CTR, STE 311, 10 FERRY ST.#6  
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Purchase Order No.: DOMH 0101.09

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Page 19 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT  
Date Received: 6/21/01

LIMS-BAT #: LIMS-56545  
Job Number: DOMH 0101.09

\*\* END OF REPORT \*\*

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