

17-JUN-1998 08:40:43

LEAK REMARKS

tss074

Leak ID: 7487

Site Name: HOLIDAY STATION STORE #226

Site City: HINCKLEY

2/12/96 LC CSR Adequate sent to Commerce.

4/17//96 SGG Chai Insook (Delta) called, MW-3 has been damaged twice in the last year because of a high volume of traffic over the well cover. I approved abandonment of MW-3 while requesting one last sample of the well before abandonment.

12/16/96: Review; non-resource aquifer, adequate separation distance to resource aquifer, plume stable as doc. from monitoring. Plume is less than 200 feet. no apparent threat to human health or the environment. See highlighted portions in RI and Closure request for specific info. Site closed. (JAJ)

06/17/98 sent to archives k1

7487

WATER

Groundwater in excavation: *N/A*

Free product present:

Depth to groundwater: *16'*

City water/wells private/municipal:

Surface water:

VAPORS

Sewers/buildings:

SITE INFORMATION

Description of area:

Previous release(s):

INSTRUCTION GIVEN

Hire consultant

Submit report

Staff will call

Contact staff

CONTACTS

Local Fire/Police

Local Officials

Regional Staff

Other

CONCLUSIONS AND OTHER RELATED INFORMATION

STATE OF MINNESOTA

DEPARTMENT OF PUBLIC SAFETY - DIVISION OF EMERGENCY MANAGEMENT
85 STATE CAPITOL SAINT PAUL 55155-1049

7487
J M H

MINNESOTA DUTY OFFICER HAZARDOUS MATERIAL INCIDENT REPORT: TANKS

REPORT DATE: 11.29.94 TIME: 1445 DUTY OFFICER: Mark RECORD#: _____

REPORTED BY: _____ SUSPECTED SOURCE/RESPONSIBLE PARTY: _____
 NAME: Paul Carter CONTACT: Bruce Anthony
 C/O: Delta Excision mental C/O: Holiday Companies
 ADDRESS: _____ ADDRESS: Box 1329
 CITY: _____ CITY: Apple. 4565 W. Bowe
 PHONE: 486-5744 STATE: _____ PHONE: 830-8899 STATE: _____
 ALT. PHONE: _____ ZIP: _____ ALT. PHONE: _____ ZIP: 55400

DISCOVERY DATE: 11.29.94 TIME: 1115
 SITE NAME & LOCATION: Holiday Sta - in Holiday - Pine Co.
 401 Five Moments Hwy.
 LEGAL: _____ SECTION: _____ TOWNSHIP: _____ RANGE: _____
 NUMBER/SIZE OF TANK(S): _____
 TANK CONTENTS: _____
 NATIVE SOIL TYPE: _____
 PREVIOUSLY REPORTED SITE?: YES / NO / UNKNOWN
 CONTAMINATED SOIL EXCAVATED?: YES / NO / UNKNOWN LEAK #: 7487
 GROUND WATER ENCOUNTERED?: YES / NO / UNKNOWN QUANTITY: _____
 FREE PRODUCT FOUND?: YES / NO / UNKNOWN DEPTH TO GW: _____
 STAINED SOIL?: YES / NO PETROLEUM ODORS: YES / NO
 HIGH VAPOR READINGS: 1,000 ppm (+) ANALYTICAL RESULTS: _____

NARRATIVE: Soil Sample done to assess site - Leak # no. removed for file review only.

HAS MATERIAL ESCAPED FACILITY PROPERTY? (YES) / NO / UNKNOWN
 **IS THIS A BUSINESS OR GOVERNMENT FACILITY REPORTING
 IN COMPLIANCE WITH SARA TITLE III, SECTION 304?: YES / NO / UNKNOWN
 (IF YES, COMPLETE PAGE TWO: SARA SUPPLEMENT)

DUTY OFFICER NOTIFICATIONS MADE (AGENCY, NAME, TIME)

Report - Card. Call J. A. Della 1998	C.M. T.O. mail.
Report - Fax.	
Report - Log 2 - Fax.	
Disc. T.O. mail.	

QUESTIONS? CONTACT THE MINNESOTA DUTY OFFICER AT 649-5451 OR 1-800-422-0798

**MINNESOTA POLLUTION CONTROL AGENCY
TANKS AND SPILLS SECTION
PETROLEUM TANK RELEASE REPORT**

Report Taken By: JM H 1656

Date/Time Occurred:

Date/Time Reported:

Date/Time Discovered:

LEAK# 7487

PROJECT MANAGER: JM H

USTIS #

8961

CALLER

Name:
Phone:
Relationship to site:

SITE

Name: Holiday Station's Love # 2226
Street: 401 Fire Monument Rd
City: Huckleby
County: Pine
Zip: 55037
Region: 2

TANK OPERATOR

Name:
Street:
City:
Contact Person:
Phone:

TANK OWNER

Name: Erickson Petroleum Corp
Street: P O Box 1224
City: Minneapolis St.: MN Zip: 55037
Contact Person: Keith Yorkow
Phone: (612) 421-5200 830-8900

Own tanks/product/property?
Share in profits?
Control over inventory, maintenance and tank decisions?

SITUATION
Material Released/Amount:

Source of Release:

Release Discovery:

Gasoline

UST

TANK INFORMATION

Contents	Size	Age	Removed	Condition	Registered
<i>Gasoline</i>	<i>12,000</i>	<i>1986</i>		<i>12051</i>	<i>9/4/88</i>
<i>"</i>	<i>"</i>	<i>"</i>		<i>"</i>	<i>"</i>
<i>"</i>	<i>"</i>	<i>"</i>		<i>"</i>	<i>"</i>
<i>"</i>	<i>10,000</i>	<i>"</i>		<i>"</i>	<i>"</i>
<i>"</i>	<i>"</i>	<i>"</i>		<i>"</i>	<i>"</i>
<i>"</i>	<i>"</i>	<i>"</i>		<i>"</i>	<i>"</i>
<i>"</i>	<i>"</i>	<i>"</i>		<i>"</i>	<i>"</i>
<i>"</i>	<i>"</i>	<i>"</i>		<i>"</i>	<i>"</i>

State or Federal
Excavation Contractor: _____
Notification prior to removal: _____
Consultant: _____

SOIL

Contaminated soil excavated:
Was it a total excavation:
Vapor readings:
Soil samples:
Borings:
Native soil type:
Stockpiled properly/disposal arranged:
Other:

WATER

Groundwater in excavation:

Free product present:

Depth to groundwater:

City water/wells private/municipal:

Surface water:

VAPORS

Sewers/buildings:

SITE INFORMATION

Description of area:

Previous release(s):

INSTRUCTION GIVEN

Hire consultant

Submit report

Staff will call

Contact staff

CONTACTS

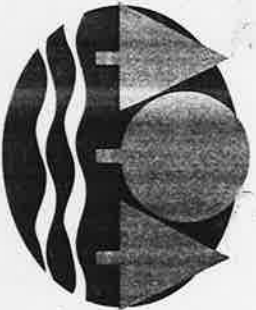
Local Fire/Police

Local Officials

Regional Staff

Other

CONCLUSIONS AND OTHER RELATED INFORMATION



Minnesota Pollution Control Agency

December 17, 1996

Mr. Bruce Anthony
Holiday Companies
4567 West 80th Street
Bloomington, Minnesota 55440

RE: Petroleum Tank Release Site File Closure
Site: Holiday Station Store, I-35 and County Road 48, Hinckley
Site ID#: LEAK00007487

Dear Mr. Anthony:

We are pleased to let you know that the Minnesota Pollution Control Agency (MPCA) Tanks and Emergency Response Section (TERS) staff has determined that your investigation and/or cleanup has adequately addressed the petroleum tank release at the site listed above. Based on the information provided, the TERS staff has closed the release site file.

Closure of the file means that the TERS staff does not require any additional investigation and/or cleanup work at this time or in the foreseeable future. Please be aware that file closure does not necessarily mean that all petroleum contamination has been removed from this site. However, the TERS staff has concluded that any remaining contamination, if present, does not appear to pose a threat to public health or the environment.

The MPCA reserves the right to reopen this file and to require additional investigation and/or cleanup work if new information or changing regulatory requirements make additional work necessary. If you or other parties discover additional contamination (either petroleum or nonpetroleum) that was not previously reported to the MPCA, Minnesota law requires that the MPCA be immediately notified.

You should understand that this letter does not release any party from liability for the petroleum contamination under Minn. Stat. ch. 115C (1994) or any other applicable state or federal law. In addition, this letter does not release any party from liability for nonpetroleum contamination, if present, under Minn. Stat. ch. 115B (1994), the Minnesota Superfund Law.

520 Lafayette Rd. N., St. Paul, MN 55155-4194; (612) 296-6300 (voice); (612) 282-5332 (TTY)

Regional Offices: Duluth • Brainerd • Detroit Lakes • Marshall • Rochester

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Mr. Bruce Anthony
December 17, 1996
Page 2

The monitoring wells for this site should be abandoned in accordance with the Minnesota Department of Health Well Code, Chapter 4725. If you choose to keep the monitoring wells, the Minnesota Department of Health will continue to assess a maintenance fee for each well.

Because you performed the requested work, the state may reimburse you for a major portion of your costs. The Petroleum Tank Release Cleanup Act establishes a fund which may provide partial reimbursement for petroleum tank release cleanup costs. This fund is administered by the Department of Commerce Petro Board. Specific eligibility rules are available from the Petro Board at 612/297-1119 or 612/297-4203.

If future development of this property or the surrounding area is planned, it should be assumed that petroleum contamination may still be present. If petroleum contamination is encountered during future development work, the MPCA staff should be notified immediately.

For specific information regarding petroleum contamination that may remain at this leak site, please call the TERS File Request Program at 612/297-8499. The "Leak/Spill and Underground Storage Tank File Request Form" (TERS Fact Sheet #3.35) must be completed prior to arranging a time for file review.

Thank you for your response to this petroleum tank release and for your cooperation with the MPCA to protect public health and the environment. If you have any questions regarding this letter, please call me at 612/297-8607.

Sincerely,



James Joslyn
Project Manager
Cleanup Unit II

Tanks and Emergency Response Section

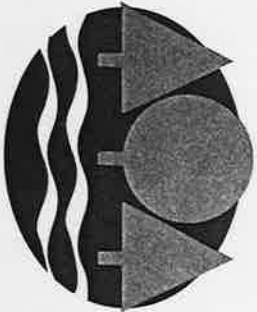
JJ:smm

cc: James Ausmus, Hinckley City Clerk
Dave Hopkins, Hinckley Fire Chief
Megan Tewinkel, Delta Environmental
Shirley Basta, Pine County Solid Waste Officer
Minnesota Department of Commerce Petrofund Staff

+-----+
| MPCA Leaksite Rema | Screen | Leak ID: 7487 |
+-----+

2/12/96 LC CSR Adequate sent to Commerce.
4/17//96 SGG Chai Insook (Delta) called, MW-3 has been damaged twice in
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well cover. I approved abandonment of MW-3 while requesting
one last sample of the well before abandonment.
12/16/96: Review; non-resource aquifer, adequate separation distance to
resource aquifer, plume stable as doc. from monitoring. plume is less
than 200 feet. no apparent threat to human health or the environment.
See highlighted portions in RI and Closure request for specific info.
Site closed. (JAJ)

-----+
Rpt Trkng(F11) Restore(F12) Save(F10) Quit(PF3) >
-----+



Minnesota Pollution Control Agency

October 11, 1995

Mr. Bruce Anthony
Holiday Companies
4567 West 80th Street
Bloomington, Minnesota 55440

JAS

RE: Corrective Action Design Approval
Site: Holiday Station Store, I35 and CR #48, Hinckley
Site ID#: LEAK00007487

The Minnesota Pollution Control Agency (MPCA) staff has reviewed your proposed Corrective Action Design dated April 10, 1995, outlining a plan of response to the petroleum tank release(s) at the above-referenced site. The MPCA staff hereby approves ground water monitoring as your Corrective Action Design. Please proceed in accordance with the following modifications:

1. The three monitoring wells should be analyzed quarterly for benzene, ethyl benzene, xylene, toluene, gasoline range organics and diesel range organics.
2. Efforts should be made to sample the wells on the Holiday Station property and the Tobies property concurrently to establish a consistent ground water flow direction beneath both sites. Maxum Engineer (formerly Huntington Engineering) should be contacted to make arrangements.
3. Quarterly monitoring worksheets and annual progress reports should be submitted in accordance with MPCA Fact Sheets. Recommendations for further monitoring, active clean-up, or site closure should be included in the progress reports.

If subsequently obtained information indicates that the approved corrective actions are inappropriate or inadequate, the MPCA may require additional work or modifications in the approved work.

This approval qualifies you under Minn. Stat. § 115C.09, subd. 2(a)(3) (1992) to be eligible for Petrofund reimbursement of eligible cleanup costs. Applications for reimbursement must be made directly to the Petrofund. Decisions regarding Petrofund reimbursement are made by the Petro Board. Reimbursement decisions are based on factors such as the adequacy of cleanup, reasonableness of cost, compliance with notification laws, and cooperation with the MPCA.

Mr. Bruce Anthony

Page 2

October 11, 1995

If you have questions regarding the investigation of ground water at this site, please contact MPC/A staff hydrogeologist Stephen Geyen at 612/297-8602. If you have any other questions, please contact the project manager, Jean Hanson at 612/297-8595.

Sincerely,



Jean Hanson
Project Leader
Cleanup Unit II
Tanks and Emergency Response

JH/SG:ms

cc: Chai Insook, Delta Environmental, St Paul



Stephen Geyen
Hydrogeologist
Cleanup Unit II
Tanks and Emergency Response

HYDRO REVIEW

DATE: July 1, 1995
LEAKSITE NO: 7487

SITE NAME: Holiday Station, Hinckley
HYDRO: Stephen Geyen

CONSULTANT: Delta

TANK INFO

Tank #	Contents	Capacity	Type	Removed	Condition	Age
1	10k	unl	ust	n	?	
2	10k	unl	'	n	'	
3	12k	unl	'	n	'	
4	12k	dies	'	n	'	

BACKGROUND

STATUS OF SOILS

Five soil borings were completed at the site. The following samples were collected during completion of the borings.

	Depth	Benz	GRO
SB1(MW1)	15	40ppb	170ppm
	25	33	0
SB2	7	25	0
	15	150	.79
SB3(MW2)	22	0	0
SB4	15	51	.89
	22	190	2.5
SB5	15	0	0

VAPOR IMPACTS

Storm and sanitary sewer lines are positioned above the ground water table, therefore a vapor survey was not considered necessary. A vapor survey conducted by TCT for Tobies did not detect vapors in any of the buildings on the Tobies property.

STATUS OF GROUND WATER

	date	Benz	GRO	DRO
MW1	12/6/94	1400	13000	6000
	1/20/95	1100	12000	4300

MW2	-	2.7	35	0
	-	0	0	0
MW3	-	0	0	0
	-	0	0	0

RECEPTOR SURVEY

An abandoned well and an inactive well are present within 500 feet of the site other than these wells no others are located within one mile of the site.

REMAINING CONTAMINANT LEVELS

Low levels of soil contamination are present at the site. It is possible that GW contamination is migrating from the Tobies gas station on to the the Holiday Station property. Significant GW contamination has not been detected in the down gradient well MW 3.

GEOLOGY

Poorly sorted sands and gravel to ~ 25 ft underlain by a silt and sandy clay till unit. The Hinckley Sandstone Formation is located at approximately 43 ft bg an is used as the primary drinking water aquifer in the region.

DEPTH TO WATER 15 ft

K: 4.04 ft/day

GW FLOW DIRECTION: SW

HYDRAULIC GRADIENT: .04 ft/ft

GW VELOCITY: 256 ft/yr

WELL SCREEN INTERVAL:
14-24 ft

REPORTS SUBMITTED:

RI/CAD Delta 4/7/95

CAD IMPLEMENTED:

Quarterly GW monitoring.

PETROFUND COMMENTS:

CONCERNS:

Holiday Companies

GEN. OFFICE: 4567 WEST 80TH STREET / MAIL ADDRESS: P.O. BOX 1224 MINNEAPOLIS, MN 55440 / PH. 612-830-8700 / FAX 612-830-8064
CREDIT OFFICE: 5501 W. OLD SHAKOPEE RD. / MAIL ADDRESS: P.O. BOX 1216 MINNEAPOLIS, MN 55440 / PH. 612-921-5200 / FAX 612-921-5295

August 12, 1994

RECEIVED
AUG 18 1994
MPCA, HAZARDOUS
WASTE DIVISION

Ms. Jean Hanson
Tanks and Spills Section
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155-4194

RE: LEAK00007487

Dear Ms. Hanson:

Holiday has reviewed your letter of July 8, 1994 regarding the alleged release of gasoline at our stationstore in Hinckley.

Per our telephone conversation on August 12, 1994, Holiday intends to refer this matter to Delta Environmental Inc., St. Paul, MN. Delta has previously reviewed data from the Tobies' site investigation and is familiar with the situation. We estimate that a review of available information about the site and the development of a response plan will take approximately 2 months to complete.

If you have any questions, please call me at 830-8899.

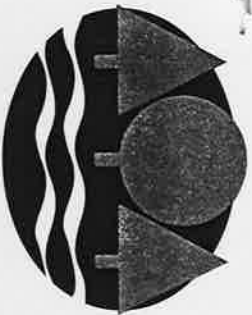
Sincerely,



Bruce K. Anthony
Environmental Manager



bcc: Bob Sedey
Keith Yokom



Minnesota Pollution Control Agency

July 8, 1994

Mr. Keith Yokum
Holiday Companies
4567 West 80th Street
Bloomington, Minnesota 55440

RE: Petroleum Storage Tank Release Investigation and Corrective Action
Site: Holiday Station Store, I35 and CR #48, Hinckley
Site ID#: LEAK00007487

Dear Mr. Yokum:

Notice of Release

The Minnesota Pollution Control Agency (MPCA) has received notification that a release of petroleum has occurred from storage tank facilities which you own and/or operate that has resulted in contamination of soil and/or ground water. This information was determined upon review of the remedial investigation (RI) work conducted at Tobies in Hinckley.

Legal Obligations

Federal and state laws require that persons legally responsible for storage tank releases notify the MPCA of the release, investigate the extent of the release and take actions needed to ensure that the release is cleaned up. A person is considered legally responsible for a tank release if the person owned or operated the tank either during or after the release, unless specifically exempted under the law. See Minn. Stat. § 115C.021 (1992). If you believe that you are not legally responsible for this storage tank release, please submit a written explanation of your position to the MPCA within 30 days.

If you are not legally responsible for the release, but hold legal or equitable title to the property where the release occurred, you may volunteer to take corrective action. Responsible persons and volunteers who take corrective action may be eligible for reimbursement for a major portion of the costs of corrective action. The legislature has established the Petroleum Tank Release Cleanup Account to reimburse responsible persons and volunteers. The account is administered by the Petro Board which is part of the Minnesota Department of Commerce. Final decisions regarding the amount of reimbursement are made by the Petro Board. All questions about eligibility and reimbursement should be directed to the Petro Board at 612/297-1119 or 612/297-4203.

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Mr. Keith Yokum

Page 2

July 8, 1994

Request to Take Corrective Action

The MPCA staff is requesting you to take the steps necessary to investigate and clean up the release in accordance with the enclosed MPCA fact sheets. The MPCA requires that you conduct a site investigation to define the full extent and magnitude of the soil and/or ground water contamination caused by the release. A report which details the results of the investigation or concludes that excavation was sufficient to address the release for cleanup (Excavation Report and/or Remedial Investigation/Corrective Action Design (RI/CAD)) must be submitted to this office within 10 months of the date of this letter. Please refer to MPCA fact sheets for information pertaining to the degree of investigative work necessary at petroleum release sites.

Sites with free product, drinking water supply impacts, fire or explosion hazards, or ground water impacts which pose a significant threat to public health or the environment, are considered high priority for staff review. If one or more of these situations apply to your site, an RI/CAD report must be submitted within 90 days. In addition, if you know or discover that there is free-floating petroleum in a well, excavation, or borehole, you must notify the MPCA within 24 hours and IMMEDIATELY begin interim free product recovery.

If you have not already done so, the MPCA recommends that you hire a qualified consulting firm registered with the Petro Board that has experience in conducting petroleum release site investigations and in proposing and implementing appropriate corrective actions. A list of registered contractors and consultants is available from the Minnesota Department of Commerce. The MPCA reserves the right to reject proposed corrective actions if the requirements of the site investigation have not been fulfilled. Please note that, under Minn. Rules pt. 2890.0075, subp. 2, you must solicit a minimum of two competitive proposals on a form prescribed by the Petro Board to ensure that the consulting costs are reasonable. Questions about bidding requirements should be directed to Petro Board staff.

Required Response

MPCA staff requests a written or verbal response to this letter within 30 days. In your response, please tell us whether you intend to comply with the above requirements. If you do not respond within this time frame, the MPCA staff will assume that you do not intend to comply, in which case the MPCA Commissioner may order you to take corrective action. If you do not comply with the Commissioner's order, it may be enforced in court or, alternatively, the MPCA could use state funds to clean up the release and then request the Attorney General to recover its costs from you through legal action. Failure to cooperate with the MPCA in a timely manner will also result in reduced reimbursement from the Petro Board. See Minn. Rules pt. 2890.0065, subp. 1, item C.

Mr. Keith Yokum

Page 3

July 8, 1994

The MPCA has enclosed a copy of the RI conducted at Tobies. Also, enclosed are fact sheets which will provide you with the information necessary to complete a successful investigation and cleanup.

If you have any questions concerning this letter or need additional information, please contact me at 612/297-8595. Please reference the above LEAK # in all correspondence.

Sincerely,

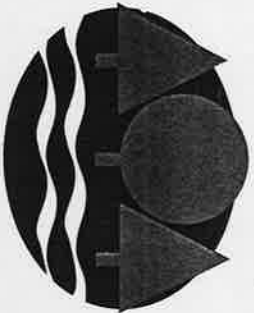


Jean Hanson
Project Leader
Cleanup Unit II
Tanks and Spills Section

JH:tf

Enclosures

cc: Randy Hickie, Tobies Restaurant, Hinckley
James Ausmus, City Clerk, Hinckley
Skip Fagerstrom, Fire Chief, Hinckley
Stan Kalinoski, Brainerd Regional Office



Minnesota Pollution Control Agency

July 1, 1994

Mr. Keith Yokum

~~Erickson Petroleum Corporation~~

~~Box 1224~~

Minneapolis, Minnesota ~~55440~~

RE: Petroleum Storage Tank Release Investigation and Corrective Action

Site: Holiday Station Store, I35 and CR #48, Hinckley

Site ID#: LEAK00007487

Dear Mr. Yokum:

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Mr. Keith Yokum

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Sincerely,



Jean Hanson
Project Leader
Cleanup Unit II
Tanks and Spills Section

JH:tf

Enclosures

cc: Randy Hickie, Tobies Restaurant, Hinckley
James Ausmus, City Clerk, Hinckley
Skip Fagerstrom, Fire Chief, Hinckley
Stan Kalinoski, Brainerd Regional Office



Minnesota Pollution Control Agency

August 2, 1993

Mr. Keith Yokum
Erickson Petroleum Corporation
P.O. Box 1224
Minneapolis, Minnesota 55440

Dear Mr. Yokum:

RE: Site Check at Holiday Station in Hinckley

The Minnesota Pollution Control Agency (MPCA) has reviewed the information you submitted in January 1993, for the above-referenced site. The investigation at Tobies has not yet been completed. The remedial investigation, corrective action design report should be submitted this fall or winter.

If after reviewing the report the MPCA believes that a separate release has occurred from the Holiday Station or that all the contamination is from Tobies, staff will get back to you.

Thank you for your quick response and investigation of the lines and tanks at the station. If you have any questions please feel free to contact me at 612/297-8595.

Sincerely,

Jean M. Hanson
Project Leader
Tanks and Spills Section
Hazardous Waste Division

JMH:mk

cc: Jim Simonet, EnecoTech, Bloomington
Stan Kalinoski, Brainerd Regional Office

Holiday Companies

GEN. OFFICE: 4567 WEST 90th STREET / MAIL ADDRESS: P.O. BOX 1224 MINNEAPOLIS, MN 55440 / PH. 612-830-8700 / FAX 612-830-8864
CREDIT OFFICE: 5501 W. OLD SIKAOPE RD. / MAIL ADDRESS: P.O. BOX 1216 MINNEAPOLIS, MN 55440 / PH. 612-921-5200 / FAX 612-921-5295

RECEIVED

January 21, 1993

JAN 25 1993

MPCA, HAZARDOUS
WASTE DIVISION

Jean Hanson
Project Leader - Tanks and Spills Section
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

RE: Site: Holiday Stationstore #226

Dear Ms. Hanson:

We have completed our review of the information you sent to us regarding the release currently being investigated at the Tobie's site, located across County Road 48 and directly south of our station. In addition to my review, we also had David Ronnel, a senior project manager at Delta Environmental Consultants, Inc. (Delta), review the information you provided from the Tobie's site.

Based on our review of the information provided, and our own tank system testing data, we have concluded that the evidence does not indicate that our station has had any release. The following comments provide the basis of our conclusion:

1. Testing conducted on December 22, 1992 has shown that our systems are free of leaks.
 2. We have never experienced a damaged pump island, as indicated in Comment No. 2 of your December 17, 1992, letter. As I noted in my December 24, 1992, response to you, we have no record of this incident.
 3. The soil boring advanced near our property, SB-01, does contain low concentrations of typical petroleum hydrocarbon constituents. In Comment No. 1 of your December 17, 1992, letter, you state that our station is "upgradient" of the Tobie's site. In our review of the EnecoTobie's Figures 4 through 7, it is clear that the gradients, both horizontal and vertical, have not been defined. Vector comparisons of ground water flow direction on some of the monitoring wells, such as MW-2, show 270-degree variations over an 11-month period. Furthermore, figures 4,5, and to some degree 6, show possible northerly deflections in the gradient across the Tobie's site; deflections toward our station. Our conclusion, based on the available data, is that the minor contamination observed in boring SB-01 defines the northern extent of the contaminant plume emanating from the Tobie's release.
- We were unable to evaluate the quality control used in the collection of the water from SB-01 because this information was not provided in the package you forwarded to me. Apparently, there was some sort of temporary well installed in the boring from which the sample was collected. We would like to review the protocol used for collection of this sample, and we would also like to review any sample blank Quality Assurance/Quality Control data collected.



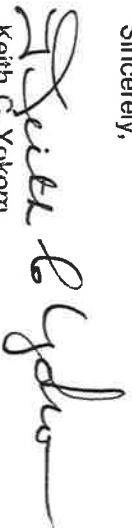
4. Concentrations in the Tobie's wells continue to decrease at a rapid rate. We are uncertain as to whether this is some sort of sampling and/or drilling artifact, or a "real" decrease. Measurements of dissolved oxygen concentrations in the monitoring wells may assist in determining what is causing the decreases. Benzene concentrations in MW-1 and MW-3 have decreased to nearly acceptable concentrations, assuming the site will be granted to cleanup goal 100 times the Recommended Allowable Limits for benzene. A concern we have when evaluating the benzene and total petroleum hydrocarbon (TPH) concentrations is that the ratios seem to be skewed, indicating the presence of heavier hydrocarbons in the water, perhaps fuel oil. We were unable to find results of TPH fuel-oil analysis in the package you presented to us.

Based on the above comments, we recommend the following:

1. Holiday Companies should not expend resources and tax dollars to investigate what we believe is the northern extent of Tobie's contaminant plume. The information you provided to us, along with our tank testing data, substantiates our conclusion. We request that Holiday Companies be copied on reports and laboratory data regarding Tobie's site, so that we can assess potential impacts to our property.
2. Definition of the gradient, both horizontal and vertical, should be completed on the Tobie's site.
3. The sample parameter list for the Tobie's wells should be expanded to include TPH expressed as fuel oil and dissolved oxygen.

We will await your response before determining what further action to take regarding our site. Please understand that we intend to cooperate fully with the MPCA. We are presenting this letter to you so that you can evaluate our position regarding this situation. Please respond to this correspondence at your earliest convenience.

Sincerely,



Keith C. Yokom
Senior Maintenance/Environmental Coordinator

CC: Bob S.

QUICK MEMORANDUM FORM

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road
St. Paul, Minnesota 55155
Telephone (612) 296-6300
Date: January 6, 1993

TO: Mr. Keith Yokom
Holiday Companies
P.O. Box 1224
Minneapolis, Minnesota 55440

FROM: Jean M. Hanson *JMH*
Tanks and Spills Section
Division of Hazardous Waste
(612) 297-8595

SUBJECT: HOLIDAY STATONSTORE #226, I35W and CR #48, HINCKLEY

Enclosed are the copies of reports you requested from the Tobie's Restaurant leak site (LEAK#3367).

Two other questions/information you requested in your letter dated December 24, 1992 are as follows:

1. The source of MPCA's information was an anonymous phone call. However, information provided in the reports concerning Tobie's indicate that potentially some contamination is coming from off-site.
2. Eneco Tech Midwest, Inc., 3050 Metro Drive, Suite 115, Bloomington, MN 55425. Phone: 612/854-5513
Project Manager: James Simonet

If you have any further questions, please feel free to contact me at 612/297-8595.

cc: James Simonet, Eneco Tech Midwest, Inc.

=====

This informal way of responding to you saves us the time and expense of preparing a formal letter. Thank you for your interest, and please contact us if we can help you further or you have questions on this matter.

Regional Offices: Duluth, Brainerd, Detroit Lakes, Marshall, Rochester
Equal Opportunity Employer
copy 1-addressee copy 2-site file

Holiday Companies

GEN. OFFICE: 4567 WEST 80th STREET / MAIL ADDRESS P.O. BOX 1224 MINNEAPOLIS, MN 55440 / PH. 612-830-8700
CREDIT OFFICE: 5501 W. OLD SHAKOPEE RD. / MAIL ADDRESS: P.O. BOX 1216 MINNEAPOLIS, MN 55440 / PH. 612-921-5200

December 24, 1992

Jean Hanson
Project Leader - Tanks and Spills Section
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

RECEIVED
DEC 28 1992
MPCA, HAZARDOUS
WASTE DIVISION

RE: Site: Holiday Stationstore #2226, 135W and CR #48, Hinckley, MN
location.
Reference your letter of December 17, 1992, regarding the above
location.

Please be advised that we will be proceeding with the required
action as soon as we have received and reviewed the following
information.

1. We will need a copy of all the reports regarding Tobie's
Restaurant, which indicate the location of SB-01 in regards to our
location, the restaurant, and the gasoline station on Tobie's property.
We will also need information regarding the depth and flow direction of
the groundwater in the area.
2. The source of your information that stated approximately two years
ago a damaged pump island at the site released gasoline into the
environment, as we have no record of the incident. We feel your statement
that no repairs were made to the tank system since that time seems to be
inaccurate as all whole systems are pressurized and if no repairs were
made in the past two years, we would not be able to sell any gasoline at
the site.
3. The name of the Project Manager and the environmental consulting firm
that completed the investigation on Tobies property for possible
coordination of efforts at both sites.

For your information, we had all lines tested on December 22, 1992.
The testing indicated all three (3) were tight, and we will provide you
copies of the results, if you require them.



Jean Hanson

- 2 -

December 24, 1992

Upon receiving and reviewing the above information, we will be in a better position to address the required action at that time.

If you have any questions, please feel free to contact me at the above address or by telephone at (612) 830-8891 any time.

Sincerely,



KEITH C. YOKOM
SENIOR MAINTENANCE/ENVIRONMENTAL COORDINATOR

CC: Bob S., Lynn A., Ken K.

doc: #226-hinckley



Minnesota Pollution Control Agency

Celebrating our 25th anniversary and the 20th anniversary of the Clean Water Act

December 17, 1992

Mr. Keith Yokum
Erickson Petroleum Corporation
P.O. Box 1224
Minneapolis, Minnesota 55440

Dear Mr. Yokum:

RE: Site Check Required
Site: Holiday Stationstore #226, I35W and County Road 48, Hinckley

The Minnesota Pollution Control Agency (MPCA) has received the following information which indicates that a release may have occurred from petroleum storage tanks which you own/operate:

1. A petroleum release has been identified at Tobler's Restaurant (Tobler's), across County Road 48 to the south of Holiday Stationstore #226 (Holiday). During the remedial investigation (RI) for Tobler's, an off-site soil boring (SB-01) was advanced just south of the Holiday property, downgradient of the Holiday tanks and upgradient of the source of the release at Tobler's. A sampling event on May 5, 1992, detected the following ground water contamination in SB-01: 340 parts per billion (ppb) benzene, 34 ppb ethylbenzene and 1300 ppb total petroleum hydrocarbons as gasoline.
2. Approximately two years ago, a damaged pump island at Holiday was observed to be releasing gasoline into the environment. It is the understanding of the MPCA that no repairs have been made to the tank system since that time and that possible soil and ground water contamination has not been addressed.
3. MPCA records indicate that you do not have line leak detection for your tanks. Based upon the age of the tanks, automatic line leak detection and annual line tightness testing was required by December 1990. MPCA records also indicate that you perform tank tightness tests as a method of tank leak detection. Please provide the MPCA staff with the dates and results of tank and line tightness tests performed within the last three years.

Mr. Keith Yokum
Page 2

December 17, 1992

U.S. Environmental Protection Agency technical tank regulations, Subpart E, at 40 CFR § 280.52, require the tank owners and operators to conduct a site check if environmental contamination is the basis for suspecting a release. Therefore, federal regulations require that Holiday must measure for the presence of a release at the petroleum storage tank site. In selecting sample types, sample locations, and measurement methods, Holiday must consider the nature of the stored substance, the type of initial alarm or cause of the suspected release, the type of backfill, the depth of ground water, and other factors appropriate for identifying the presence and source of the release. If it is determined that the release is from tanks owned or operated by Holiday it will be necessary for you to take the necessary steps to investigate and clean up the release in accordance with the enclosed "Petroleum Tank Release Reports" document.

If you do perform the requested work, the state may reimburse you for a major portion of your costs. The Petroleum Tank Release Cleanup Act establishes a fund which in certain circumstances provides partial reimbursement for petroleum tank release cleanup costs. This fund is administered by the Petro Board. More specific eligibility rules are available from the Petro Board (612/297-1119 or 612/297-4203).

Please respond in writing within 15 days after receipt of this letter and indicate whether or not you intend to proceed with the necessary actions, whom you have chosen to do the work, and a schedule for implementation.

If you do not respond within 15 days, MPCA staff will assume you do not intend to comply with this request. In this event, the MPCA Commissioner may order you to take corrective action at the site. If you do not comply with the Commissioner's Order, it may be enforced in court or, alternatively, the MPCA may take the required actions itself and recover the costs incurred from you through legal action commenced by the Attorney General. Failure to cooperate with the MPCA in a timely manner may also result in reduced reimbursement from the Petro Board.

If you conclude that the release in question is not from any tank which you have owned or operated, please notify the MPCA immediately and explain the basis of your conclusion.

Mr. Keith Yokum
Page 3
December 17, 1992

If you have any questions or comments regarding this correspondence, please feel free to contact me at 612/297-8595.

Sincerely,



Jean Hanson
Project Leader
Tanks and Spills Section
Hazardous Waste Division

JH:mh

Enclosures

cc: Stan Kalinoski, MPCA Brainerd Office
Randy Hickie, Tobie's Restaurant

SITE NAME: Tobies Restaurant
LOCATION: I35 and County Road 48, Hinckley
LEAK NUMBER: 3367

REPORT TITLE: Teleconference Package - Tobies Service Station
REPORT DATE: 10/14/92
REPORT RECEIVED: 10/16/92
CONSULTANT: Enecotech
REVIEW DATE: November 24, 1992

PCS: Jean Hanson
HYDROLOGIST: David Fawcett

July 24

RECOMMENDATION: Request Additional Investigation
SCREEN UPDATED: 11/29/92

Tank Info:

Tank#	Contents	Capacity	Type	Removed	Condition/Leaks	Age
1	No Pb Gas	10,000	Steel	10/9/90	No Corrosion/Holes	25 yr
2	Regular Gas	10,000	Steel	10/9/90	No Corrosion/Holes	25 yr
3	No Pb Gas	6,000	Steel	10/9/90	No Corrosion/Holes	25 yr
4	No Pb Gas	6,000	Steel	10/9/90	No Corrosion/Holes	10 yr

Leak Info (cause):

A release appears to have occurred in the former tank basin. The PID readings in soil boring SB-01 in the north side of Fire Mountain Road may indicate an off-site source, a surface spill from Tobies or the adjacent Holiday station, or organic vapors from groundwater contamination diffusing up through the soil.

It is alleged that about 2 years ago, there was gasoline foaming up through cracks in the pump island at the Holiday Station in the winter. The Brainerd regional office was allegedly notified anonymously. Apparently, there have not been any repairs to the tank system since the discovery.

Status of Soils (excavation, treatment, soil borings, maximum levels remaining):

Approximately 400 yd³ of soil was excavated from the tank excavation. Soil samples SS-2 and SS-3 were collected from the base of the excavation. (TH-Gas = 200 and 1200 ppm) PID screening of the excavation indicated soil contamination remaining in the excavation on the N wall, NW corner, SW corner, and SE corner at 10 and 15 ft.

Nine soil borings were advanced at the site. A majority of the soil contamination is located below the water table surface. The vertical extent of contamination has not been defined in several of the boring areas (MW-01, MW-03, SB-01, and SV-02. Monitoring well MW-03 (GW at 14.67 ft) had PID readings of 592 ppm from 14-16 ft and 576 ppm from 16.5-18.5 ft.

Vapor Impacts (results and risks):

Natural gas, water and sewer lines run along the north side of Fire Mountain Road. The sewer line crosses FM Road, runs along the East side of the

excavation and runs to the station building. A sewer vapor survey was conducted. A PID reading of 1.2 ppm was detected in the man hole directly behind the station building. The owner of Tobies stated that there is a basement beneath the restaurant, that is where well H-002 was located. The basement has not been screened for vapor impacts.

Status of Ground Water (no. of wells, maximum contaminant levels, VOCs):

Six of the soil borings were completed as monitoring wells. BFTX is present in monitoring wells MW-01, MW-03, and SB-01. Benzene has been detected at a maximum concentration of 11,000 ppb. Contaminant concentrations in MW-01 tend to increase as water levels fall.

A temporary well point was installed in SB-01 and sampled. Benzene was present at 340 ppb.

Clean-up Goals/Receptor Survey:

There are six wells located within a ½ mile radius of the site. All of these wells appear to be cased into the Hinckley Sandstone. Well H-007 is located about 1 mile from the site and is screened at the base of the unconsolidated Quaternary sediments.

There are two wells located on site. One of the wells has been properly abandoned, but the other well is located below the asphalt between the station building and the restaurant and has not been properly sealed.

The degree of separation between the Quaternary units is unclear at this point.

General geology:

Soil borings indicate that the site geology consists of 7-20 feet of sands and gravels with clay lenses overlying a sandy clay unit of undefined thickness. Well logs from the on-site wells indicate 21 ft of gravel over about 40 ft of silty gravel and clay/gravel and rock. The Hinckley sandstone is found at a depth of about 60 ft.

Depth to GW: (7/22/92) 6.56 to 16.57 ft GW flow direction: fluctuates
Water levels have come up 2-4 ft greatly.
since early 1991 NE to S

K= 1.42 E-3 cm/sec (4.04 ft/d) Hyd. gradient: ranges from .01 to .006

Well screen intervals: 10 foot screens GW velocity: .06 - .11 ft/d
TOC 4 ft - 9 ft bgs

Dates of Major Events: Long Term Monitoring
Land Treatment FP Recovery GW Recovery
Begin 10/10/91
End 8/26/92

Petro Fund Comments:

-Release reported 2 days after discovery.

MPCA Comments:

The staff at the MPCA have reviewed the file for this site and feel that additional investigation is necessary to define the extent of contamination. It is requested that the following actions be taken:

1. The vertical extent of contamination must be defined. A deep boring should be advanced in the area of SV-02. The boring should extend through the contamination. If the soil is wet, the consultant should be prepared to install a deep monitoring well. If a confining layer is encountered, the well must be double-cased and be in compliance with the MDH well code.
2. Tetrachloroethane was detected in MW-04 at a concentration of 0.56 ppb. During the next quarterly round, the sample collected from MW-4 should be analyzed for VOCs.
3. In order to determine the source of groundwater contamination in SB-01, a monitoring well should be installed on the north side of Fire Mountain road in the area of SB-01. This well should be sampled at least once for volatile organic compounds (VOCs), Gasoline Range Organics (GRO), Diesel Range Organics (DRO), MTBE and dissolved lead. Future sampling parameters will be based on these results. The VOC analyses should use EPA protocol and approved methods and analyze for a list of parameters identical to those listed under Minnesota Department of Health (MDH) method 465D, including BETX, 1,2-dibromoethane (EDB) and 1,2-dichloroethane (EDC).
4. At the time of each quarterly groundwater sampling event, the sewers should be screened with a PID and explosimeter. The basement of the restaurant should be screened for vapor impacts as well.
5. The well located beneath the asphalt should be located and abandoned in accordance with the MDH Well Code. Prior to abandonment, the well should be sampled for VOCs and GRO.
6. The well location description provided on the well log for H-007 appears to conflict with the location provided on the potential well receptor map. Please verify the location of H-007.
7. A site-check letter should be sent to Holiday requesting an investigation of a possible leak, based on off-site physical evidence a possible release.



3900 Northwoods Drive
Suite 200
St. Paul, MN 55112
612/486-8022
FAX: 612/486-8021

April 7, 1995

RECEIVED

Ms. Jean Hanson
Minnesota Pollution Control Agency
Hazardous Waste Division
Tanks and Spills Section
520 Lafayette Road North
St. Paul, MN 55155-3898

MPCA, HAZARDOUS
WASTE DIVISION

APR 10 1995

Subject: Remedial Investigation/Corrective Action Design Report
Holiday Station No. 226
Hinckley, Minnesota
MPCA Leak No. 7487
Delta No. A094-158

Dear Ms. Hanson:

On behalf of Holiday Companies, Inc. (Holiday), Delta Environmental Consultants, Inc. (Delta), is submitting the above reference Remedial Investigation/Corrective Action Design (RI/CAD) report for your review and approval.

The RI/CAD was completed at the Holiday Station No. 226 in response to the Minnesota Pollution Control Agency (MPCA) action letter dated July 8, 1994, which requested Holiday to conduct a voluntary subsurface soil and ground water investigation at the above referenced site.

Based on investigative results, Delta recommends that quarterly ground water sampling and reporting be conducted in April, July, and October 1995. Delta will recommend site closure if hydrocarbons concentrations in monitoring wells do not increase significantly during 1995.

If you have any questions regarding this RI/CAD report, please contact me at (612) 486-5845.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Chai Insook
Project Manager

CI/bjc

Enclosures

cc Mr. Keith Yokom - Holiday Company Inc.
Mr. Neil Piazza - Agricultural Excess and Surplus Insurance Company

**REMEDIAL INVESTIGATION/
CORRECTIVE ACTION DESIGN REPORT**

RECEIVED

HOLIDAY STATION NO. 226

APR 10 1995

HINCKLEY, MINNESOTA

**MPCA, HAZARDOUS
WASTE DIVISION**

MPCA LEAK NO. 7487

DELTA NO. A094-158-1

Prepared by:

**Delta Environmental Consultants, Inc.
3900 Northwoods Drive, Suite 200
St. Paul, MN 55112
(612) 486-8022**

April 7, 1995

RECEIVED

APR 10 1995

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REMEDIAL INVESTIGATION/
CORRECTIVE ACTION DESIGN REPORT

HOLIDAY STATION NO. 226

HINCKLEY MINNESOTA

MPCA LEAK NO. 7487

DELTA NO. A094-158-1

1.0 INTRODUCTION

1.1 Purpose and Authorization

This report presents the results of a remedial investigation (RI) conducted by Delta Environmental Consultants, Inc. (Delta), on behalf of Holiday Companies (Holiday), at the Holiday Station No. 226 (the Holiday site). The Holiday site is located at on the northeast corner of Interstate Highway 35 (I-35) and County Road 48, in Hinckley, Minnesota (Figure 1). Holiday requested Delta to conduct a subsurface environmental investigation of soil and ground water at the site in response to the Minnesota Pollution Control Agency (MPCA) action letter dated July 8, 1994.

1.2 Scope of Work

The following scope of work was completed at the site:

- Completed a file review at the MPCA of data and reports collected and completed as part of the RI completed by Tobies Service Station, which is an adjacent leak site.
- Drilled five soil borings and installed three ground water monitoring wells.
- Submitted eight (8) soil samples collected from the five soil borings, and two rounds of ground water samples collected from the three monitoring wells for chemical analyses.
- Collected two rounds of ground water elevations data from the three wells on the Holiday site and from available wells on the Tobies site to evaluate the direction of ground water flow.
- Completed a record search of registered water wells located within a 1 mile radius of the site.
- Completed the MPCA Hydrogeologic Setting and Ground Water Contamination Worksheet (Fact Sheet No.24).
- Prepared and submitted this RI/CAD report, which incorporates hydrogeologic data from an RI/CAD report prepared for the Tobies Service Station site.

2.0 BACKGROUND INFORMATION

Holiday has operated a petroleum retail facility (Holiday Station No. 226) on the site property (Figure 2) since 1986. Before 1986, the site property was vacant and prior history of site use is unknown. The Holiday site operates four underground storage tanks (USTs) (two 10,000 gallon tanks and two 12,000 gallon tanks) and dispenses unleaded and diesel fuel; sales of leaded gasoline was discontinued in 1991. USTs and connective product pipe lines at the Holiday site are pressure tested for leaks annually; the previous two tests were conducted in August 1994, and July 1993. The results of pressure testing did not indicate a leak in any of the USTs at the Holiday station. Additionally, product inventory records at the Holiday station do not indicate any significant product loss from the USTs.

The Holiday site is located north of County Road 48. South of County Road 48 is the Tobies site (Figure 3). In October 1990 four USTs were excavated and removed at the Tobies site, and a release of petroleum hydrocarbons was reported to the MPCA (MPCA Leak No. 3367). An RI was then conducted at the Tobies site by EnecoTech (1992) and Huntingdon (HTCT [1993]).

The results of RI completed at the Tobies site indicated that the Holiday site was a potential up-gradient source of hydrocarbons that were detected in ground water at the Tobies site. Subsequently, the MPCA requested that Holiday conduct an RI at the Holiday site to access the possible release of hydrocarbons into subsurface soils and ground water.

3.0 FIELD INVESTIGATION

A remedial investigation of subsurface soils and ground water was conducted at the Holiday site in November 1994. During this phase of work, five (5) soil borings were drilled and three monitoring wells were installed. Underground utilities at the site that may serve as potential receptors of organic vapors were also identified. Field methodologies are presented in Appendix A.

3.1 Drilling and Soil Sampling

Drilling was conducted on November 29 and November 30, 1994, utilizing a Mobile drilling rig, equipped with 4.25 inch inner diameter (I.D.) hollow stem-augers. The auger flights had been steam-cleaned prior to arrival at the site, and they were judged to be clean. Only clean augers were used to drill the soil borings and the wells. Additional steam cleaning of the augers took place off site and was performed by the drillers as needed.

Five soil borings (SB-1, SB-2, SB-3, SB-4, and SB-5 [Figure 2]) were drilled and soil samples were collected utilizing a 2 inch outside diameter split spoon sampler. Split spoon soil samples were collected continuously from approximately 2 feet below ground surface (bgs) to the base of soil boring SB-1. Split spoon soil samples were collected at approximately every 5 foot interval in soil borings SB-2, SB-3, SB-4, and SB-5.

Before sampling a particular interval, the split spoon sample was cleaned in a phosphate free detergent wash, rinsed with potable water, then dried. Samples for chemical analysis were collected into clean sample jars that were prepared by the laboratory. Generally, soil from the bottom 6 inch sample from the split spoon was collected for the laboratory analysis.

Selected soil samples from the split spoons were collected for headspace screening of total organic vapors using a photo ionization detector (PID) equipped with a 10.8 electron volts lamp, and for lithologic logging. The soil samples were described in accordance with the Unified Soil Classification System. Soil vapor headspace measurements and field soil classification methodologies are described in Appendix A. The PID soil headspace readings are recorded on the geologic logs of the soil borings, which are provided in Appendix B.

Soil boring SB-1 was drilled immediately south of the tank basin and south of the gasoline pump island, on the southern property boundary, to a total depth of 26 feet bgs. SB-2 was drilled approximately 20 feet west of the pump island, to the depth of 21 feet bgs. SB-3 was drilled on the southwest corner of the property boundary to the depth of 30 feet bgs. SB-4 was drilled immediately north of the pump island to the total depth of 23 feet bgs, and SB-5 was drilled approximately 20 feet north of the pump island to the total depth of 25 feet bgs. Ground water was encountered in all soil borings at approximately 14 to 16 feet bgs. Additional soil borings could not be drilled south and east of SB-1 (MW-1) because of overhead and underground utilities.

Two soil samples were collected from each of the borings SB-1, SB-2, and SB-4 for chemical analyses of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and gasoline range organics (GRO). A sample from the interval exhibiting the highest headspace reading (generally from the sample near the vadose zone) and a soil sample from near the base of each boring were collected for chemical analyses. In borings that exhibited low field PID readings (SB-3 and SB-5), only one soil sample from each borehole was collected for chemical analysis.

3.2 Monitoring Well Installation

Three monitoring wells (MW-1, MW-2, and MW-3) were installed in the boreholes of soil borings SB-1, SB-3, SB-5, respectively. Each well was constructed of 2 inch I.D., Schedule 40, poly vinyl chloride (PVC) screen with a 0.010 inch manufactured slot size. The well screens extend from 14 to 24 feet bgs in wells MW-1, from 16 to 26 feet bgs in MW-2, and from 15 to 25 feet bgs in MW-3. A 2 inch I.D., polyvinyl chloride (PVC) casing extended from the top of the well screens to the ground surface. A No. 30 silica sand pack was placed from the bottom of the borehole to 2 feet above the well screen, and bentonite grout seal was placed above the sand pack. MW-1 and MW-3 were completed as at-grade monitoring wells, equipped with 8 in I.D., protective manhole covers and locking steel caps. MW-2 was completed as an above-grade monitoring well, equipped with a 6 inch ID protective steel casing. Monitoring wells completion diagrams and soil boring logs are provided in Appendix B.

A specific point on the top of each monitoring well PVC casing was denoted with a notch, and marked with an indelible ink pen. The denoted marks were surveyed by Kemper & Associates, Inc., (Kemper), a licensed surveyor. The elevations were referenced to the nearest National Geodetic Vertical Datum (NGVD) survey benchmark. In order to compare elevations data from the Holiday site to those of the Tobies site, Holiday well MW-2 and Tobies MW-3 were surveyed to a common reference datum by representatives from Delta and HTCT. This information was used to adjust the top of casing (TOC) elevations at the Tobies site to the same reference datum at the Holiday site.

3.3 Well Development and Ground Water Sampling

In order to remove the fine-grained materials from the wells and sand packs, and to improve the hydraulic communication between the wells and the geologic materials, monitoring wells were developed on December 6, 1994, utilizing a bailing method.

Ground water samples were collected after well development on December 6, 1994, and again on January 20, 1995. Ground water samples collected on December 6, 1994 were analyzed for volatile organic compounds (VOCs), GRO, and DRO. Ground water samples collected on January 20, 1995 were analyzed for BTEX, GRO, and DRO.

Before purging and collecting the samples, the depth to ground water in the wells was measured with an electronic water level indicator. The monitoring wells were then purged, and ground water samples were collected utilizing dedicated PVC bailers. Free product was not encountered in any of the wells during well

development, purging, and sampling activities. Water level measurement and ground water sampling protocol are discussed in Appendix A.

3.4 Potential Receptors of Organic Vapors

During the site investigation, underground utilities in the site vicinity were located and mapped (Figure 2). Storm and sanitary sewer lines are positioned above the ground water table, and are located cross-gradient of ground water flow beneath the Holiday site. An organic vapor survey of utilities was deemed unnecessary.

HTCT conducted an organic vapor survey in the sanitary and storm sewers along County Road 48, and in the two buildings on the Tobies site in November 1993. HTCT utilized an explosimeter and PID to screen for organic vapors, and reported that no readings above background levels were observed in the sewers or in the buildings.

4.0 PROJECT RESULTS

4.1 Site Geology

Geologic logs of soil borings indicate that the Holiday site is predominantly underlain by a mixture of poorly sorted sands and gravels, with discontinuous lenses of poorly sorted sands, and silty sands. The sand and gravel layer extends from ground surface to approximately 21 to 28 feet bgs. Approximately 4 to 7 feet of silty sand and gravel fill was encountered above the poorly sorted sand and gravel layer in SB-1 and SB-4 (north and south of the canopy). Fill was not encountered in boreholes SB-2, SB-3, and SB-5.

A silty and sandy clay till unit was encountered beneath the poorly sorted sand and gravel layer in all borings except SB-2, where auger refusal was encountered at 21 feet bgs. Auger refusal may indicate a cobble in the sand and gravel unit, or the contact with the clay till. All borings at the Holiday site (except SB-2) terminated in the clay till.

Geology observed at the Holiday site is consistent with that observed at the Tobies site. Geology at the Tobies site is reported to be predominantly glacial till, which consists of approximately 7 to 20 feet of sands and gravels, intermixed with clay lenses. A sandy clay unit with a minimum thickness of approximately 20 feet underlies the sand and gravel layer. According to HTCT, the Hinckley Sandstone Formation (regional bedrock) is approximately 43 feet bgs at the Tobies site (HTCT B-8).

Geology beneath the Holiday and Tobies sites is depicted in a generalized geologic cross-section (Figure 4), with the line of cross-section shown in Figure 3. In constructing the geologic cross-section, elevations for Tobies site wells and soil borings were adjusted relative to the surveyed elevations for the Holiday site. Figure 4 shows that the sand and gravel layer, and the clay till unit are laterally extensive and exhibits variable thickness beneath the sites.

4.2 Site Hydrogeology

Ground water was encountered in all soil borings at the Holiday site at approximately 14 to 16 feet bgs. Depth to water levels were measured in Holiday wells on December 6, 1994, December 20, 1994, and on January 20, 1995. Depth to water levels were measured in all Tobies site wells on December 20, 1994, and in three Tobies site wells which are closest to the Holiday site on January 20, 1995.

Direction of ground water flow beneath the Holiday site was approximated for the December 6, 1994, ground water elevations data (Figures 5). Ground water elevations contour maps for the Holiday and the Tobies sites were constructed for the December 20, 1994, and January 20, 1995, data (Figure 6, and 7). Figure 5, 6, and 7 show that ground water beneath the Holiday site flows southwest, with a hydraulic gradient that ranges from approximately 0.02 to 0.06 ft/ft.

EnecoTech conducted single well response (slug) tests in monitoring wells MW-1, MW-2 and MW-3, at the Tobies site in September 1992, and reported an average horizontal hydraulic conductivity (K) value of 4.04 feet per day (ft/d). To estimate ground water flow velocities beneath the Holiday site, the average K (4.04 ft/d) value that was estimated at the Tobies site and the highest hydraulic gradient observed at the Holiday site (0.06 ft/ft) were applied in Darcy's equation for ground water flow. According to Darcy's equation, average linear flow velocity can be calculated as follows (Freeze and Cherry, 1979, p.71):

$$\text{Darcy's Equation:} \quad V_x = -Ki/n$$

Where: V_x = horizontal linear flow velocity (ft/d)

K = horizontal hydraulic conductivity (4.04 ft/d at the site)

i = horizontal hydraulic gradient (0.06 ft/ft at the site)

n = effective porosity (estimated at 35 percent for sand)

Using the reported K value of 4.04 ft/d, the highest horizontal hydraulic gradient observed at the Holiday site of 0.06 ft/ft, and an average porosity of 0.35 for sand, the average linear horizontal ground water velocity at the site is approximately 0.7 ft/d (about 256 feet per year). The MPCA Hydrogeologic Setting and Ground Water Contamination Worksheet (Fact Sheet No. 24) is provided in Appendix C.

Figure 6 represents ground water elevations data for all wells at both Holiday and Tobies sites. As shown in Figure 6, a ground water mound, which acts as a ground water flow divide, may exist beneath the Tobies site. The highest ground water elevation observed at the Tobies site is in well MW-2 (1014.83 feet). Ground water north of Tobies MW-2 flows north toward the Holiday site, and ground water south of Tobies MW-2 flows south. Figure 7 represents elevations data for all Holiday wells and elevation data from MW-2, MW-3, and MW-6 at the Tobies site, and shows that ground water beneath the Tobies site flows north in the area north of Tobies well MW-2.

4.3 Soil Chemistry

Field PID headspace screening of total organic vapors in soils collected from split spoon samples showed that organic vapors were detected in all soil borings. PID headspace readings of less than 100 parts per million (ppm) were screened in soils samples collected from borings SB-3 (4 ppm @ 21 to 23 foot interval), SB-4 (39 ppm @ 9 to 11 foot interval), and SB-5 (12 ppm @ 14 to 16 foot interval). PID reading greater than 100 ppm were screened in soil samples collected from borings SB-2 (214 ppm @ 6 to 8 foot interval), and in SB-1 (1119 ppm @ 14 to 16 foot interval). PID readings decreased below the 6 to 8 foot interval in boring SB-2, and suggests that overfills or surface spills may have occurred near the tank basin. PID readings decreased to less than 20 ppm at the base of boring SB-2, decreased to 5 ppm at the base of boring SB-4, and no organic vapors were detected at the base of borings SB-1, SB-3, and SB-5.

Selected soil samples from borings were analyzed for BTEX and GRO. Analytical results of soils are presented in Table 2 and Figure 8. As shown in Table 2 and Figure 8, BTEX and GRO were detected in the sample collected from the 14 to 16 foot interval, and benzene and ethylbenzene were detected in the sample collected at the base of SB-1. Benzene was detected in the sample collected from the 6 to 8 foot interval, and BTEX and GRO were detected in the sample collected from the 14 to 16 foot interval of SB-2. BTEX and GRO were detected in the sample collected from the 14 to 16 foot interval and in the sample collected from the base of SB-4.

Based on low field PID readings, a sample at the vadose zone of SB-3 (west of the UST basin), and from the base of SB-5 (north of the pump island) were not submitted for analyzes. BTEX and GRO were not detected in the base sample of SB-3 or from the 14 to 16 foot sample interval of SB-5.

The highest concentrations of benzene (0.19 milligrams per kilograms [mg/kg]), and GRO (2.5 mg/kg) present at the base of the borings were detected in SB-4. These low concentrations of hydrocarbons detected in soils below the water table indicate that the vertical extent of hydrocarbons in soil is adequately defined. Laboratory report sheets for soil samples, with analytical methods and method detection limits, are provided in Appendix D.

4.4 Ground Water Chemistry

Ground water samples were collected on December 6, 1994, and on January 20, 1995. Samples collected in December 1994 were analyzed for volatile organic compounds (VOCs), GRO and diesel range organics (DRO). Samples collected in January 1995 were analyzed for BTEX, GRO, and DRO. The analytical results of ground water samples are presented in Table 3, Table 4, and Figure 9. The laboratory reports for water samples, showing analytical methods, method detection limits, and results are provided in Appendix E.

As shown in Table 3 and Figure 9, BTEX, GRO, and DRO were detected in ground water sample collected from MW-1 in December 1994 and January 1995, with benzene and ethylbenzene concentrations exceeding the Minnesota Department of Health (MDH) Health Risk Limits (HRLs) in both sampling events. Benzene and GRO were detected in the sample collected from MW-2 in December 1994, but BTEX and GRO were not detected in the sample collected from MW-2 in January 1995. Benzene, xylenes, and GRO were detected in the sample collected from MW-3 in both sampling events. Additionally, DRO was detected in the sample collected from MW-3 in January 1995. BTEX concentrations did not exceed HRLs in samples collected from MW-2 and MW-3.

Table 4 and Appendix E show additional VOCs that were detected in the ground water samples collected from MW-1 and MW-3 on December 6, 1994. All the analytes listed on Table 4 (except for naphthalene [420 ug/l] in MW-1) are either detected at concentrations less than the HRLs, or no state compliance standard are available for them.

4.5 Potential Receptors

Delta conducted a water well inventory using compiled driller's logs from the Minnesota Geological Survey (MGS). EnecoTech conducted a water well inventory for the Tobies site in October 1992. EnecoTech reported that one abandoned well and one inactive well (beneath asphalt) are located within 500 feet south of the site, and that no drinking water wells are known to exist within 1000 feet of the Tobies site. EnecoTech also reported that the underlying clay till, that may be a minimum of 20 feet thick, overlies the local drinking water aquifer (Hinckley Sandstone). According to the well logs, all the identified water wells were completed in the Hinckley Sandstone, with top of screens installed deeper than 60 feet bgs, and all the wells were screened below the regional confining clay till unit. Water well locations are shown in Figure 10, and the MGS well logs are provided in Appendix F.

According to HTCT, the split spoon samples of the clay till in soil boring B-8 were dry from 27 to 43 feet bgs. This indicates that the clay till unit acts as a confining layer between the shallow ground water aquifer observed at the site and the regional bedrock aquifer of the Hinckley Sandstone.

5.0 CONCLUSIONS

5.1 Hydrocarbons in Soils

The highest concentration of GRO in soil was detected in the sample from the 14 to 16 foot interval of SB-1 (170 mg/kg), which is located south of the pump island, may indicate a release on the Holiday property. Annual tightness tests and inventory records do not indicate that a release from tanks and lines has occurred at the Holiday site, and detected hydrocarbons in soils may be related to routine filling and dispensing operations. Low concentrations of hydrocarbons in soils near the UST basin (SB-2) and pump islands (SB-4) may indicate that a release of petroleum hydrocarbons did occur at some time at the site.

5.2 Ground Water Flow

Ground water elevations data collected on three measuring events consistently show that ground water beneath the Holiday site flows southwest (Figures 5, 6, and 7). Figures 6 and 7 show that ground water beneath the Tobies site flows north in the northern part of the site, and Figure 6 also shows that ground water beneath the Tobies site flows south in the southern part of the site.

5.3 Hydrocarbons in Ground Water

BTEX concentrations detected in samples MW-2 and MW-3 did not exceed HRLs. Benzene and ethylbenzene concentrations detected in ground water samples collected from MW-1 exceeded HRLs. The

highest concentrations of benzene (1400 micrograms per liter [ug/l]), GRO (13000 ug/l), and DRO (6000 ug/l) in ground water at the Holiday site were detected in the sample collected from MW-1, in December 1994. BTEX, GRO, and DRO concentrations detected in the December 1994 sample from MW-1 at the Holiday site are lower than the reported concentrations for the same analytes detected in the June 1994 sample of MW-3 at the Tobies site.

Ground water sample collected from Tobies MW-3 showed detections of benzene (2300 ug/l), toluene (8300 ug/l), ethyl benzene (1300 ug/l), xylenes (14000 ug/l), and GRO (40000 ug/l) in June 1994. The highest benzene concentration reported for Tobies MW-3 was 5000 ug/l, in December 1993. The highest benzene concentration detected in ground water at the Tobies site was observed in Tobies MW-1 (11000 ug/l) in January 1991.

Figure 4 shows a north to south geologic cross-section from MW-3 on the Holiday site to MW-7A on the Tobies site, and also shows ground water elevations for December 20, 1994. As shown in Figure 4, ground water flows from Tobies MW-3 towards Holiday MW-1, suggesting that hydrocarbons concentrations observed in Holiday MW-1 may be attributed to the release at the Tobies site. Tobies UST basin is positioned approximately 10 feet south of Tobies MW-3.

5.4 Potential Receptors

Underground utilities are positioned above the ground water table, and are not located down gradient of site ground water flow. No active water wells exist within one mile down-gradient of the site, and the municipal water supply wells are located approximately one half mile west of the site (Figure 10). These facts, coupled with low concentrations of VOCs detected in site soils and ground water, indicate that the hydrocarbons detected at the site should not impact local utilities or area aquifers.

6.0 RECOMMENDATIONS

Based upon the above conclusions, Delta recommends that quarterly ground water samples be collected from the three Holiday site wells in April, July and October 1995, and samples should be analyzed for BTEX and GRO. Delta recommends that the monitoring site visits at the Holiday and the Tobies sites be completed concurrently to aid comparison of hydrogeochemical data. Depth to ground water in monitoring wells at both sites should also be measured quarterly during site visits, to evaluate the direction of ground water flow

beneath both sites. A ground water mound may exist at the Tobies site (between MW-3 and MW-1), and its cause should be identified. If ground water impacts on Holiday's site do not increase significantly during 1995, we will recommend project closure.

7.0 REMARKS


The recommendations contained in this report represent our professional opinions. These opinions are based on currently-available information and are arrived at in accordance with currently-accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by DELTA ENVIRONMENTAL CONSULTANTS, INC.


Chai Insook
Project Manager

Date: 4/7/95

Reviewed by:


Paul Carter
Project Manager

H:\user\chait\94158\94158R1

How -
Don't we require
4 rounds of sampling
after CAD approval?
Jan

TABLE 1 GROUND WATER ELEVATIONS

Holiday Station No. 226
 Hinckley, Minnesota
 DELTA NO. A094-158

Holiday Station Wells and Top of Casing Elevations						
Date	MW-1	1031.11	MW-2	1034.02	MW-3	1029.71
	Water Level	GW Elevation	Water Level	GW Elevation	Water Level	GW Elevation
06-Dec-94	21.26	1009.85	24.91	1009.11	15.56	1014.15
20-Dec-94	21.20	1009.91	24.96	1009.06	15.90	1013.81
20-Jan-95	21.83	1009.18	25.41	1008.61	19.32	1010.39

Tobles Service Station Wells and Top of Casing Elevations (reported by HTCT)													
MW-1	104.66	MW-2	106.78	MW-3	105.13	MW-4	97.85	MW-5	96.63	MW-6	101.13	MW-7A	102.48

Tobles Service Station Wells and Top of Casing Elevations (adjusted to Holiday elevations datum)															
Date	MW-1	1029.49	MW-2	1031.81	MW-3	1029.96	MW-4	1022.48	MW-5	1021.46	MW-6	1025.96	MW-7A	1027.31	
	Water Level	GW Elevation	Water Level	GW Elevation	Water Level	GW Elevation	Water Level	GW Elevation	Water Level	GW Elevation	Water Level	GW Elevation	Water Level	GW Elevation	
20-Dec-94	15.40	1014.09	16.78	1014.83	16.71	1013.25	12.45	1010.03	7.83	1013.83	12.67	1013.29	17.64	1009.67	
20-Jan-95			16.89	1014.72	16.57	1013.39					13.36	1012.60			

NOTE:

Elevations are reported in feet - NGVD (National Geodetic Vertical Datum)
 TOC elevations for Holiday station wells are provided by Kemper & Associates, Inc.
 TOC elevations for Tobles Service Station wells are normalized to Holiday wells.

Stadia rod readings of Holiday well MW-2 and Tobles well MW-3 (surveyed on 12/20/94)
 Holiday MW-2 = 2.96
 Tobles MW-3 = 7.02
 Tobles well MW-3 is 4.06 feet lower than Holiday well MW-2

TABLE 2 SOIL CHEMISTRY (mg/kg)

Holiday Station No. 226
 Hinckley, Minnesota
 Delta No. A094-158-1

Sample I.D.	Depth (feet)	Date	Benzene				GRO
			Benzene	Toluene	Ethyl-benzene	Total Xylenes	
SB-1 (MW-1)	14-16	29-Nov-94	0.04	0.053	2.7	4.1	170
	24-26	29-Nov-94	0.033	<0.05	0.15	<0.08	<0.5
SB-2	6-8	29-Nov-94	0.025	<0.05	<0.02	<0.08	<0.5
	14-16	29-Nov-94	0.15	0.26	0.026	0.25	0.79
SB-3 (MW-2)	21-23	30-Nov-94	<0.02	<0.05	<0.02	<0.08	<0.5
SB-4	14-16	30-Nov-94	0.051	0.07	0.064	0.16	0.89
	21-23	30-Nov-94	0.19	0.1	0.25	0.73	2.5
SB-5 (MW-3)	14-16	30-Nov-94	<0.02	<0.05	<0.02	<0.08	<0.5

GRO = Gasoline-range organics
 mg/kg = milligrams per kilograms, which is equivalent to parts per million (ppm)

TABLE 3 GROUND WATER CHEMISTRY (ug/l)

Holiday Station No. 226
 Hinckley, Minnesota
 Delta No. A094-158-1

Sample I.D.	Date	Benzene		Ethyl- benzene		Total Xylenes		GRO	DRO
MW-1	06-Dec-94	1400	230	1700	3300	13000	6000		
	20-Jan-95	1100	360	1600	2900	12000	4300		
MW-2	06-Dec-94	2.7	<0.6	<0.2	<0.5	35	<29		
	20-Jan-95	<0.2	<0.5	<0.2	<0.8	<20	<31		
MW-3	06-Dec-94	1.6	<0.6	<0.2	0.39	42	<29		
	20-Jan-95	1.3	<0.5	<0.2	0.82	300	40		

DRO = Diesel-range organics

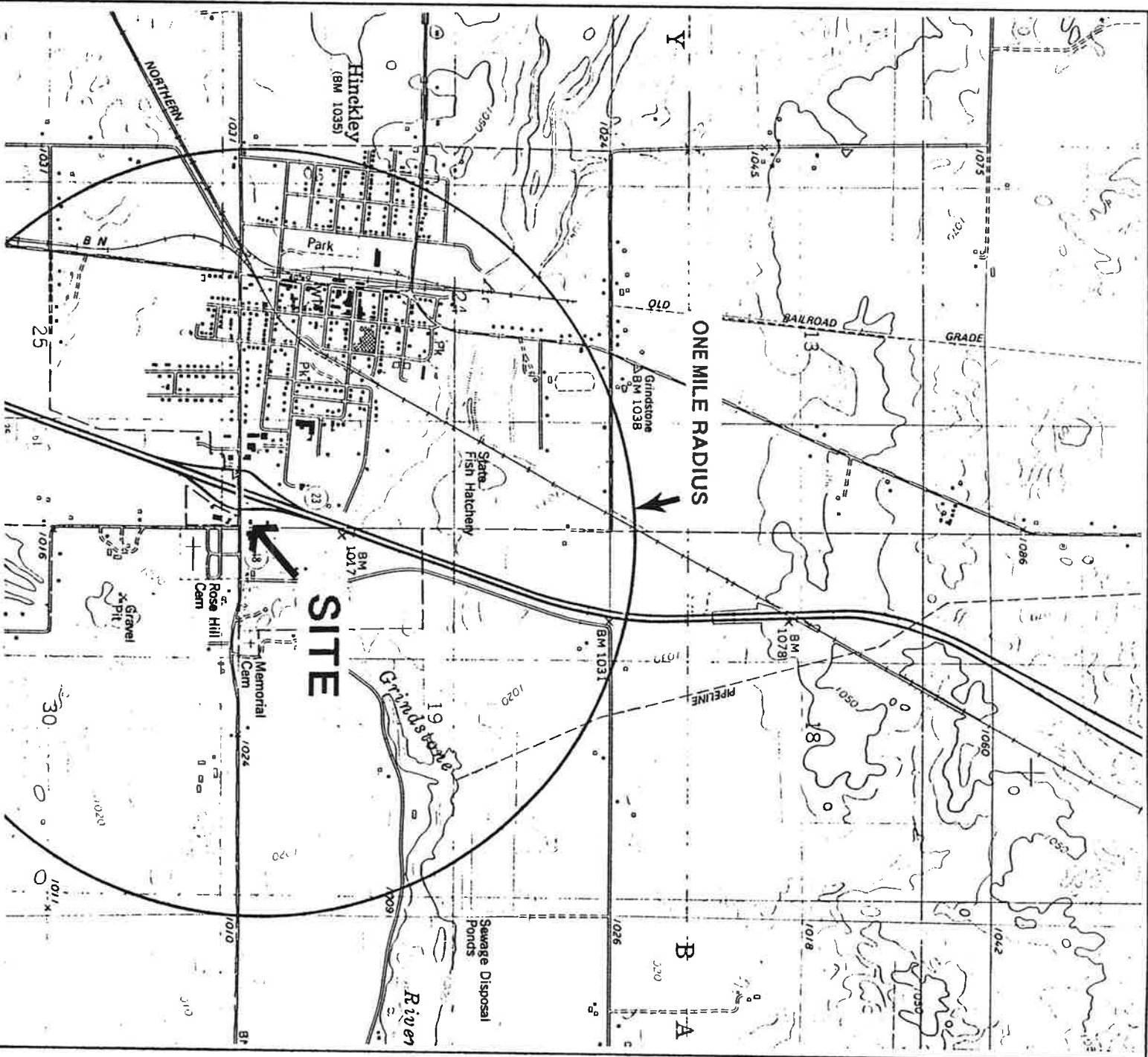
GRO = Gasoline-range organics

ug/l = micrograms per liter, which is equivalent to parts per billion (ppb)

TABLE 4 VOLATILE ORGANIC COMPOUNDS
IN GROUND WATER (ug/l)

Holiday Station No. 226
Hinckley, Minnesota
Delta No. A094-158-1

Analytes	MW-1	MW-2	MW-3
n-Butylbenzene	52	<0.2	<0.2
Chlorobenzene	<5.0	<0.2	6
1,2-Dichlorobenzene	<10	<0.4	16
1,3-Dichlorobenzene	<7.5	<0.3	0.82
1,4-Dichlorobenzene	<13	<0.5	2.3
Isopropyl benzene	88	<0.2	<0.2
p-Isophopyl toluene	8.4	<0.2	<0.2
Naphtalene	420	<0.2	0.26
1,2,4-Trimethyl benzene	530	<0.3	<0.3



HINCKLEY QUADRANGLE
 MINNESOTA-PINE CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)

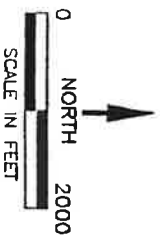
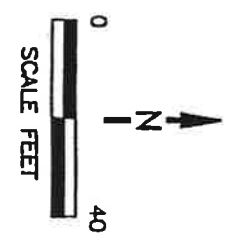
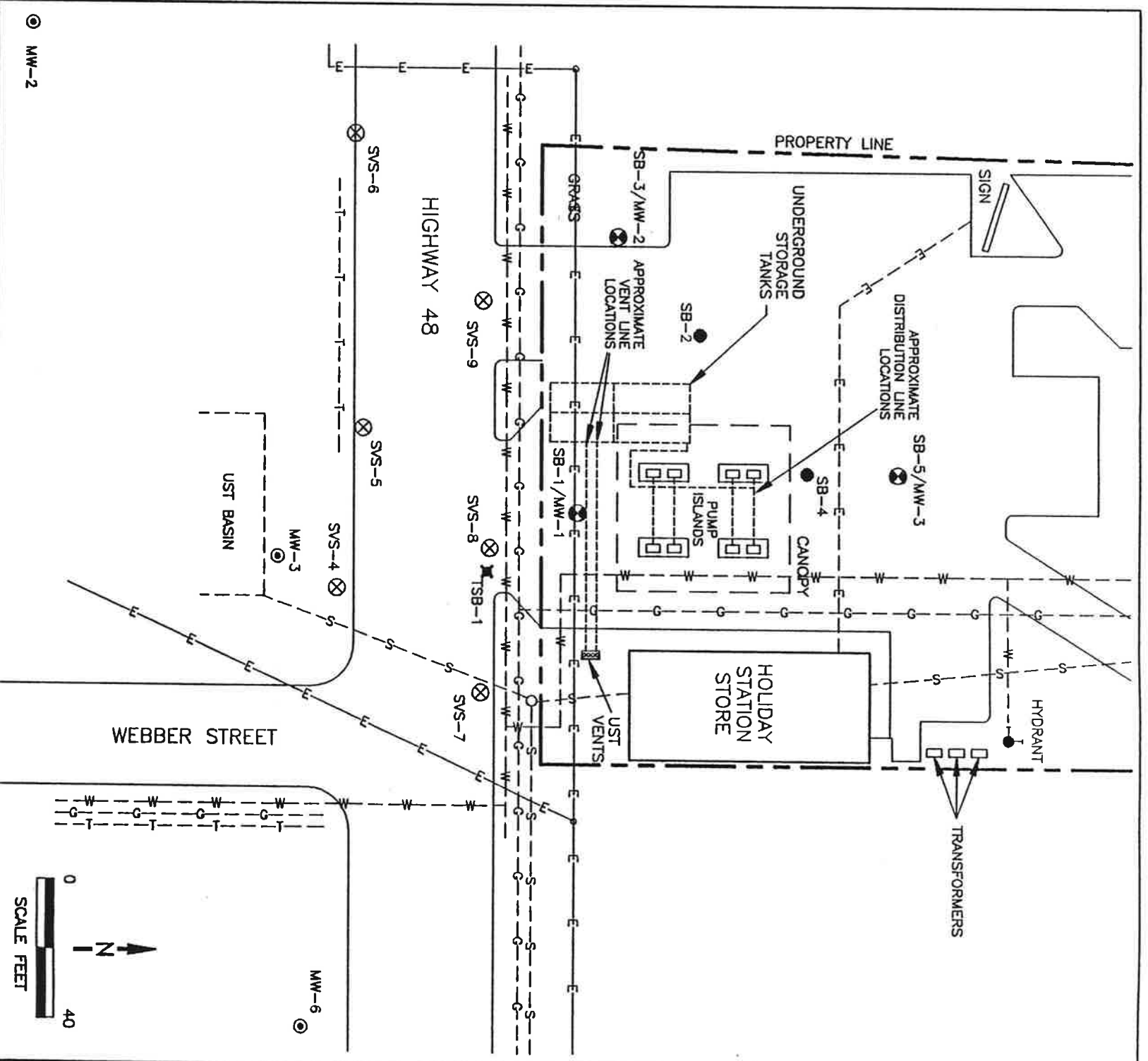


FIGURE 1
 SITE LOCATION MAP
 HOLIDAY STATION NO. 226
 HINCKLEY, MINNESOTA

PROJECT NO. A094-158	PREPARED BY CI
DATE 3/7/95	REVIEWED BY





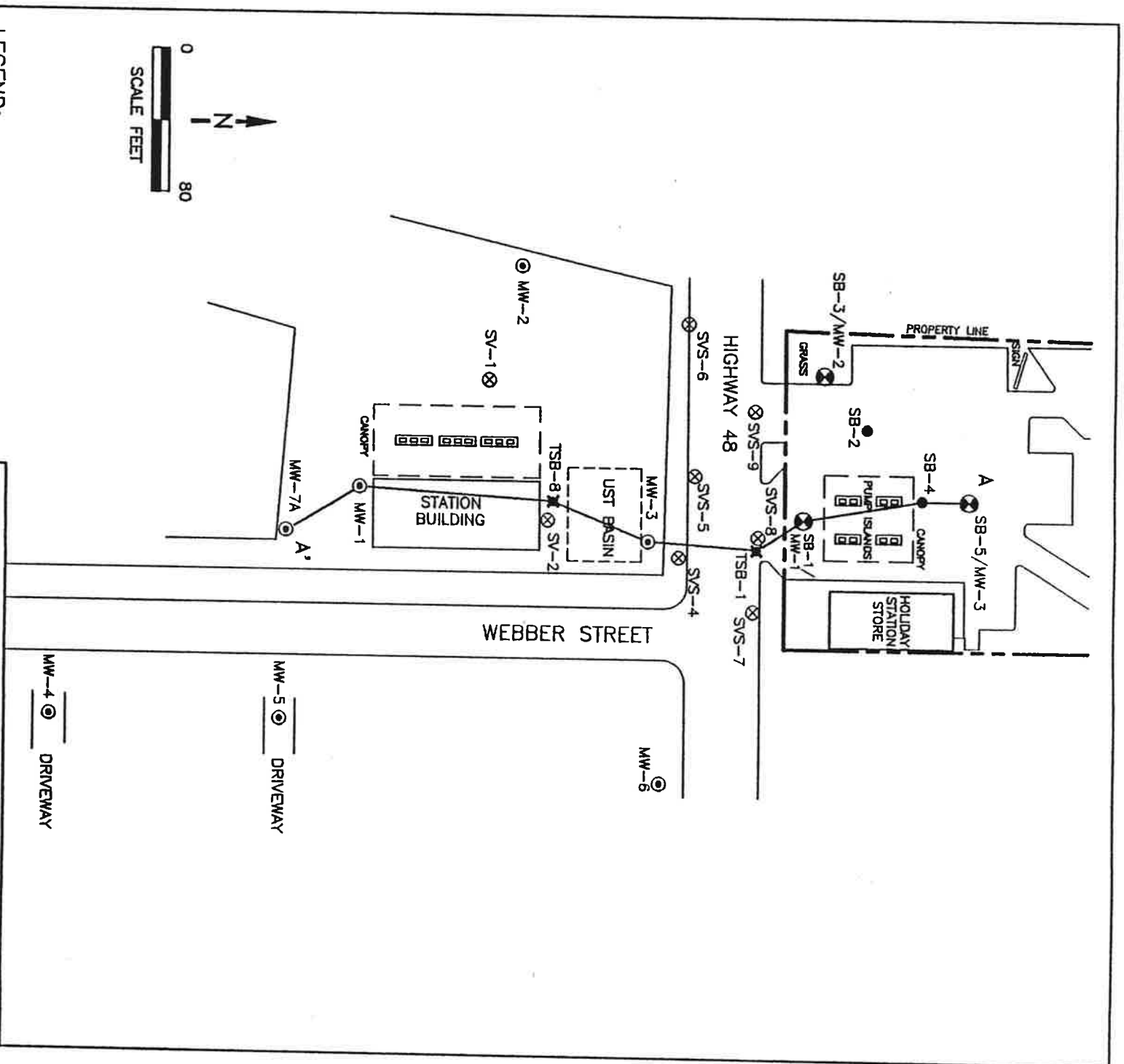
LEGEND:

- MONITORING WELL (HOLIDAY)
- SOIL BORING (HOLIDAY)
- MONITORING WELL (TOBIES)
- ⊗ SOIL VAPOR SURVEY POINT (TOBIES)
- ⊠ SOIL BORING (TOBIES)
- E— OVERHEAD POWER LINE
- S— SEWER LINE
- G— NATURAL GAS LINE
- T— TELEPHONE LINE
- W— WATER LINE

FIGURE 2
DETAILED SITE MAP
HOLIDAY STATION NO. 226
HINCKLEY, MINNESOTA

PROJECT NO. A094-158	PREPARED BY CI	DRAWN BY DD
DATE 3/16/95	REVIEWED BY	FILE NAME 94158-2





- LEGEND:**
- MONITORING WELL (HOLIDAY)
 - SOIL BORING (HOLIDAY)
 - ⊙ MONITORING WELL (TOBIES)
 - ⊗ SOIL VAPOR SURVEY POINT (TOBIES)
 - ⊠ SOIL BORING (TOBIES)

FIGURE 3
SITE MAP
HOLIDAY STATION NO. 226
AND TOBIES SERVICE STATION
(SHOWING LINE OF GEOLOGIC CROSS SECTION A-A')
HINCKLEY, MINNESOTA

PROJECT NO. A094-158	PREPARED BY CI	DRAWN BY DD
DATE 3/6/95	REVIEWED BY	FILE NAME 94158-3



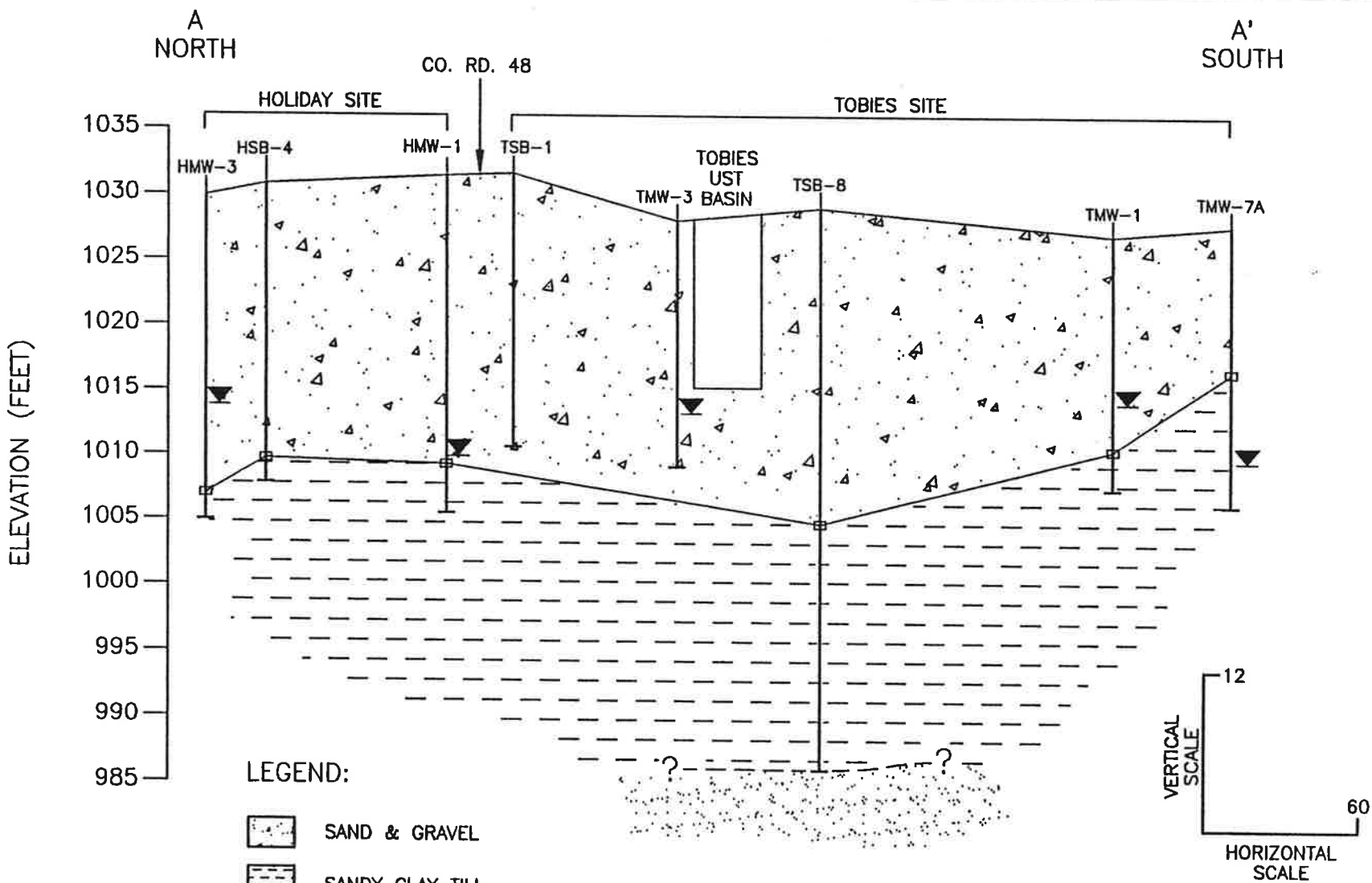
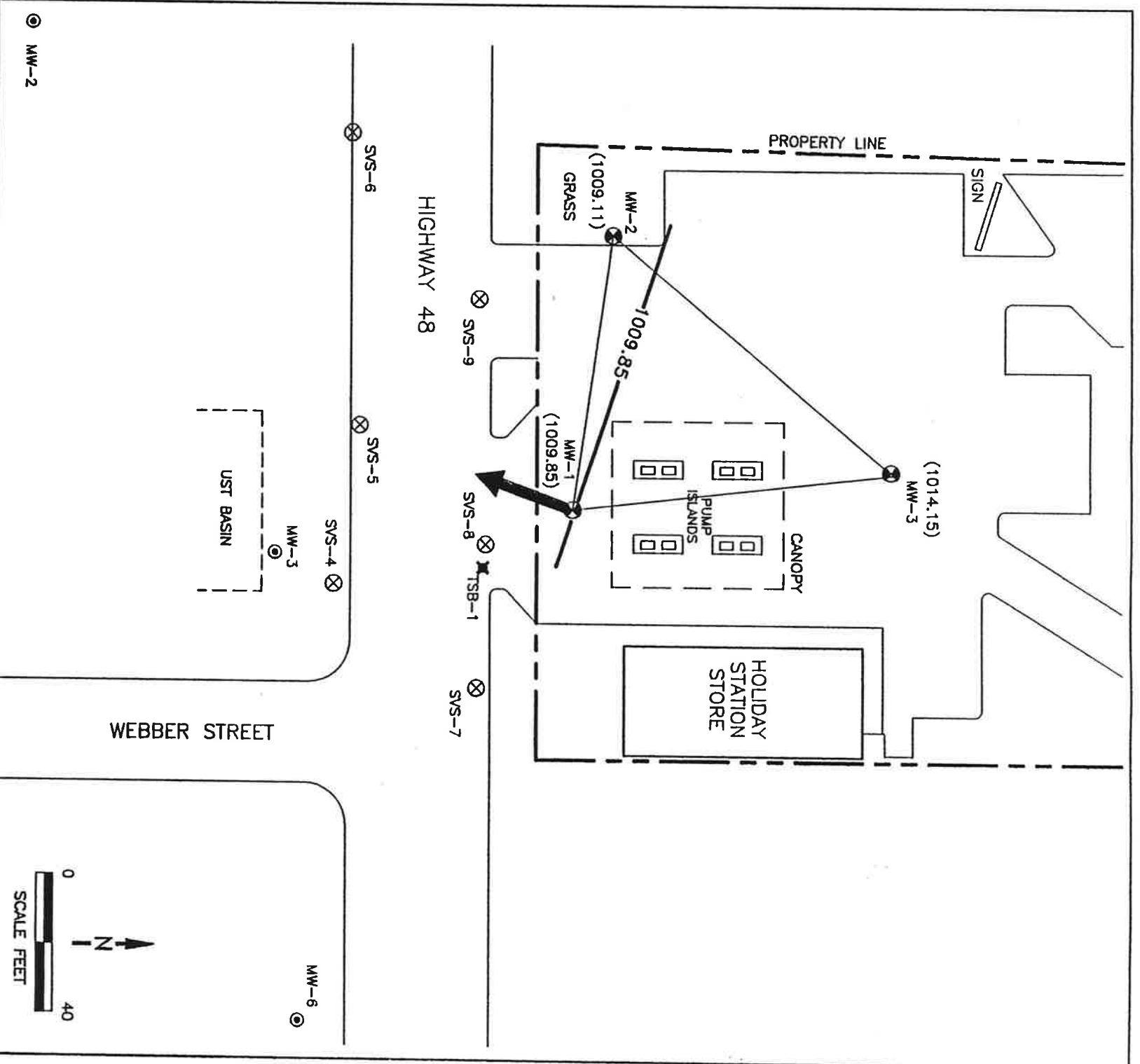


FIGURE 4
 GENERALIZED GEOLOGIC CROSS SECTION
 HOLIDAY STATION NO. 226
 AND TOBIES SERVICE STATION
 HINCKLEY, MINNESOTA

PROJECT NO. A094-158	PREPARED BY CI	DRAWN BY DD
DATE 3/7/95	REVIEWED BY	FILE NAME 94158-AA





⊙ MW-2

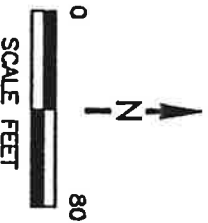
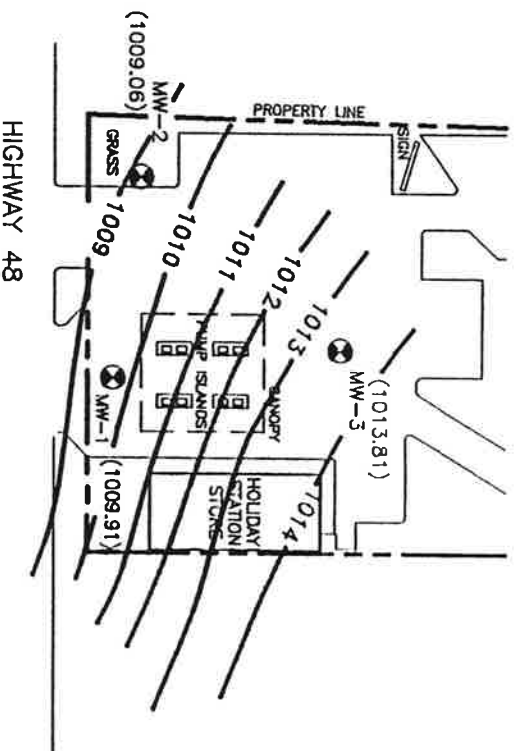
LEGEND:

- ⊙ MONITORING WELL (HOLIDAY) (1009.11) GROUND WATER ELEVATION (IN FEET)
- ⊙ MONITORING WELL (TOBIES) —1009.85— GROUND WATER CONTOUR
- ⊙ SOIL VAPOR SURVEY POINT (TOBIES)
- ⊗ SOIL BORING (TOBIES)
- ➔ DIRECTION OF GROUND WATER FLOW

FIGURE 5
GROUND WATER FLOW MAP
 DECEMBER 6, 1994
 HOLIDAY STATION NO. 226
 HINCKLEY, MINNESOTA

PROJECT NO. A094-158	PREPARED BY CI	DRAWN BY DD
DATE 3/16/95	REVIEWED BY	FILE NAME 94158-2





LEGEND:

- MONITORING WELL (HOLIDAY)
- ⊙ MONITORING WELL (TOBIES)
- (1014.09) GROUND WATER ELEVATION (IN FEET)
- 1014— GROUND WATER CONTOUR LINE

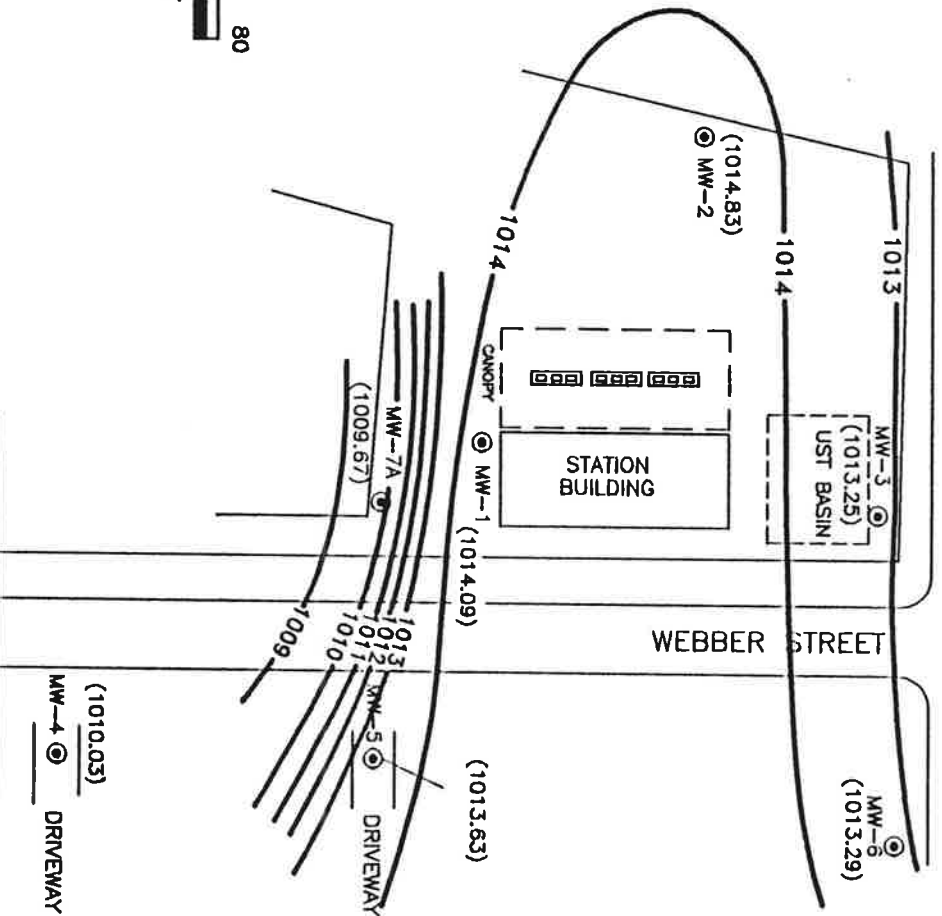
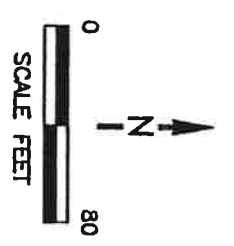
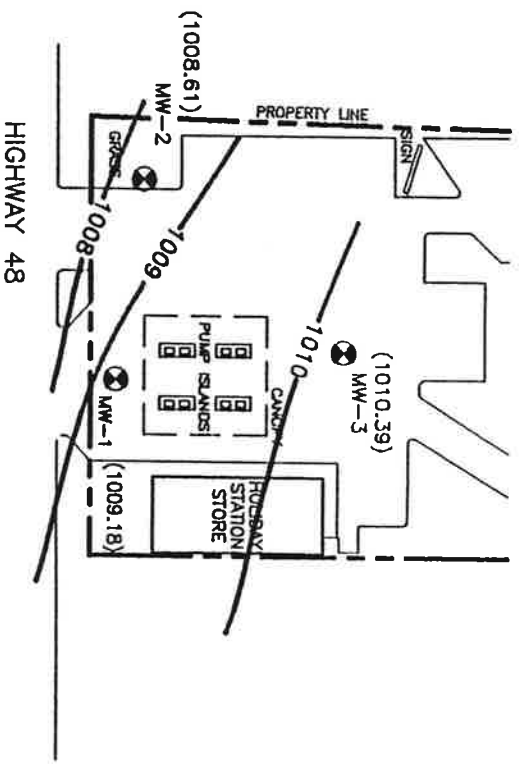


FIGURE 6
GROUND WATER CONTOUR MAP
 DECEMBER 20, 1994
 HOLIDAY STATION NO. 226
 AND TOBIES SERVICE STATION
 HINCKLEY, MINNESOTA

PROJECT NO. A094-158	PREPARED BY CI	DRAWN BY DD
DATE 3/6/95	REVIEWED BY	FILE NAME 94158-3





- LEGEND:
- ⊗ MONITORING WELL (HOLIDAY)
 - ⊙ MONITORING WELL (TOBIES)
 - (1014.72) GROUND WATER ELEVATION (IN FEET)
 - 1012— GROUND WATER CONTOUR LINE

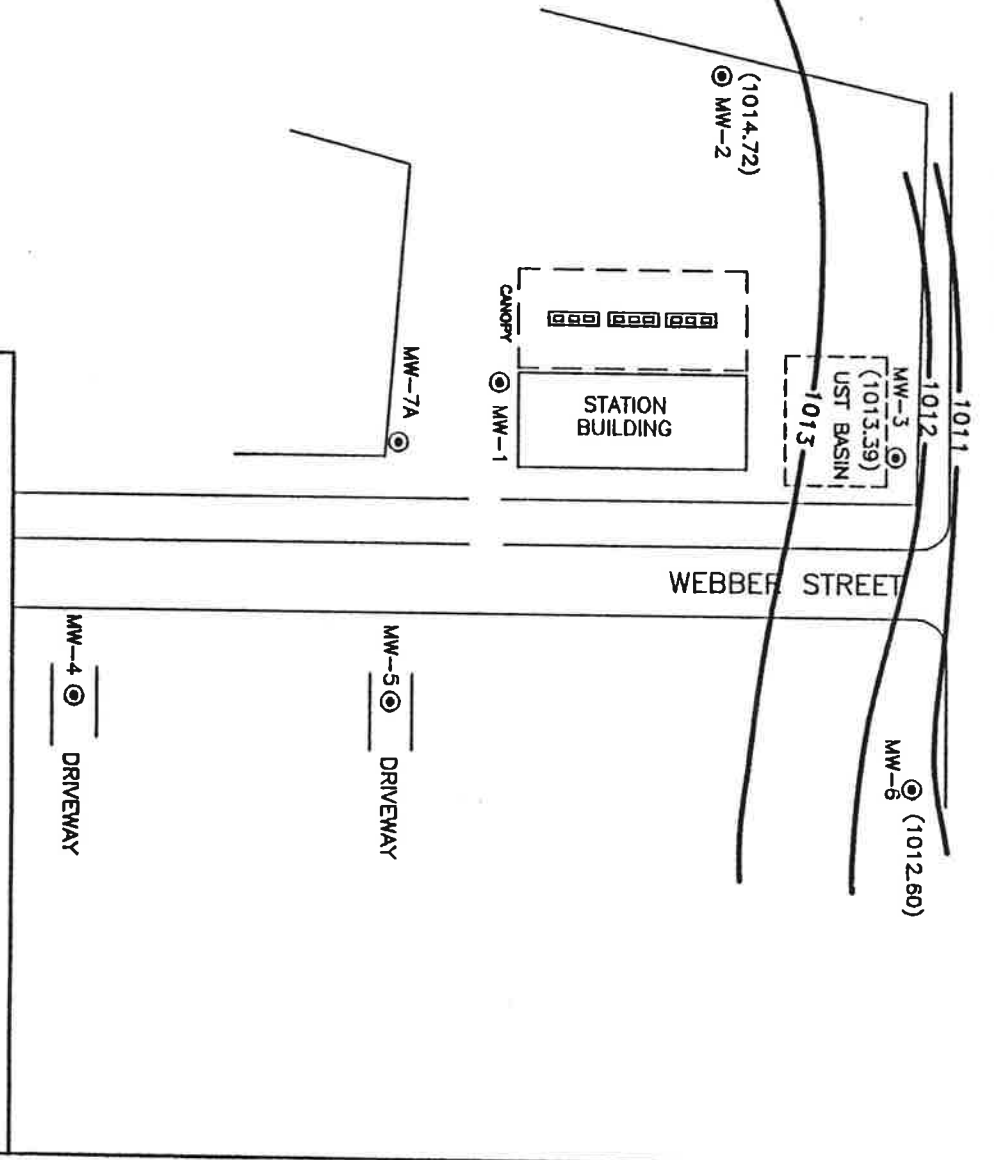
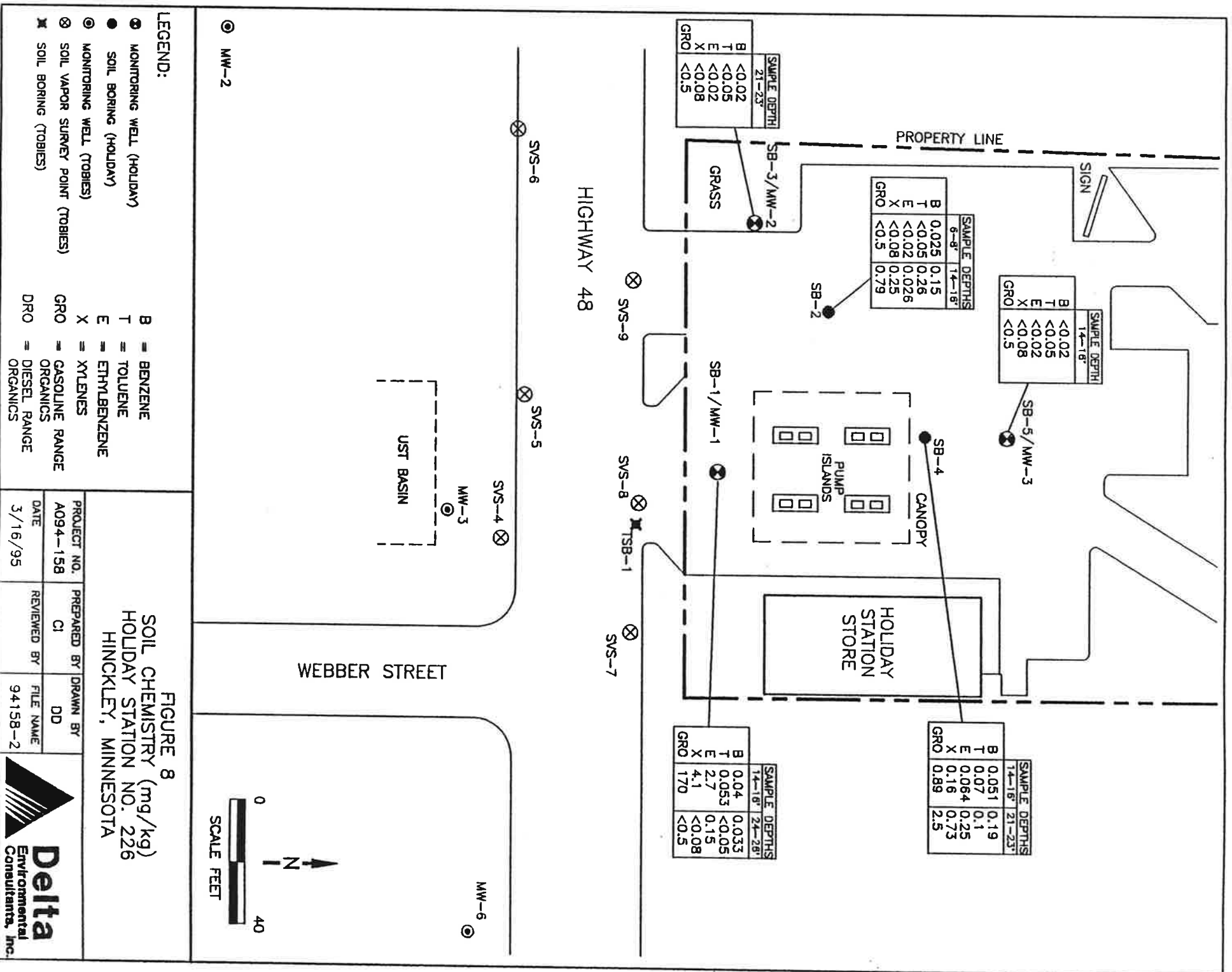


FIGURE 7
 GROUND WATER CONTOUR MAP
 JANUARY 20, 1995
 HOLIDAY STATION NO. 226
 AND TOBIES SERVICE STATION
 HINCKLEY, MINNESOTA

PROJECT NO. A094-158	PREPARED BY CI	DRAWN BY DD
DATE 3/6/95	REVIEWED BY	FILE NAME 94158-3





SAMPLE DEPTH	
14-18"	
B	<0.02
T	<0.05
E	<0.02
X	<0.08
GRO	<0.5

SAMPLE DEPTHS	
6-9"	14-18"
B	0.025
T	<0.05
E	<0.02
X	<0.08
GRO	<0.5
B	0.15
T	0.26
E	0.026
X	0.25
GRO	0.79

SAMPLE DEPTH	
21-23"	
B	<0.02
T	<0.05
E	<0.02
X	<0.08
GRO	<0.5

SAMPLE DEPTHS	
14-18"	21-23"
B	0.051
T	0.07
E	0.064
X	0.16
GRO	0.89
B	0.19
T	0.1
E	0.25
X	0.73
GRO	2.5

SAMPLE DEPTHS	
14-18"	24-28"
B	0.04
T	0.053
E	2.7
X	4.1
GRO	170
B	0.033
T	<0.05
E	0.15
X	<0.08
GRO	<0.5



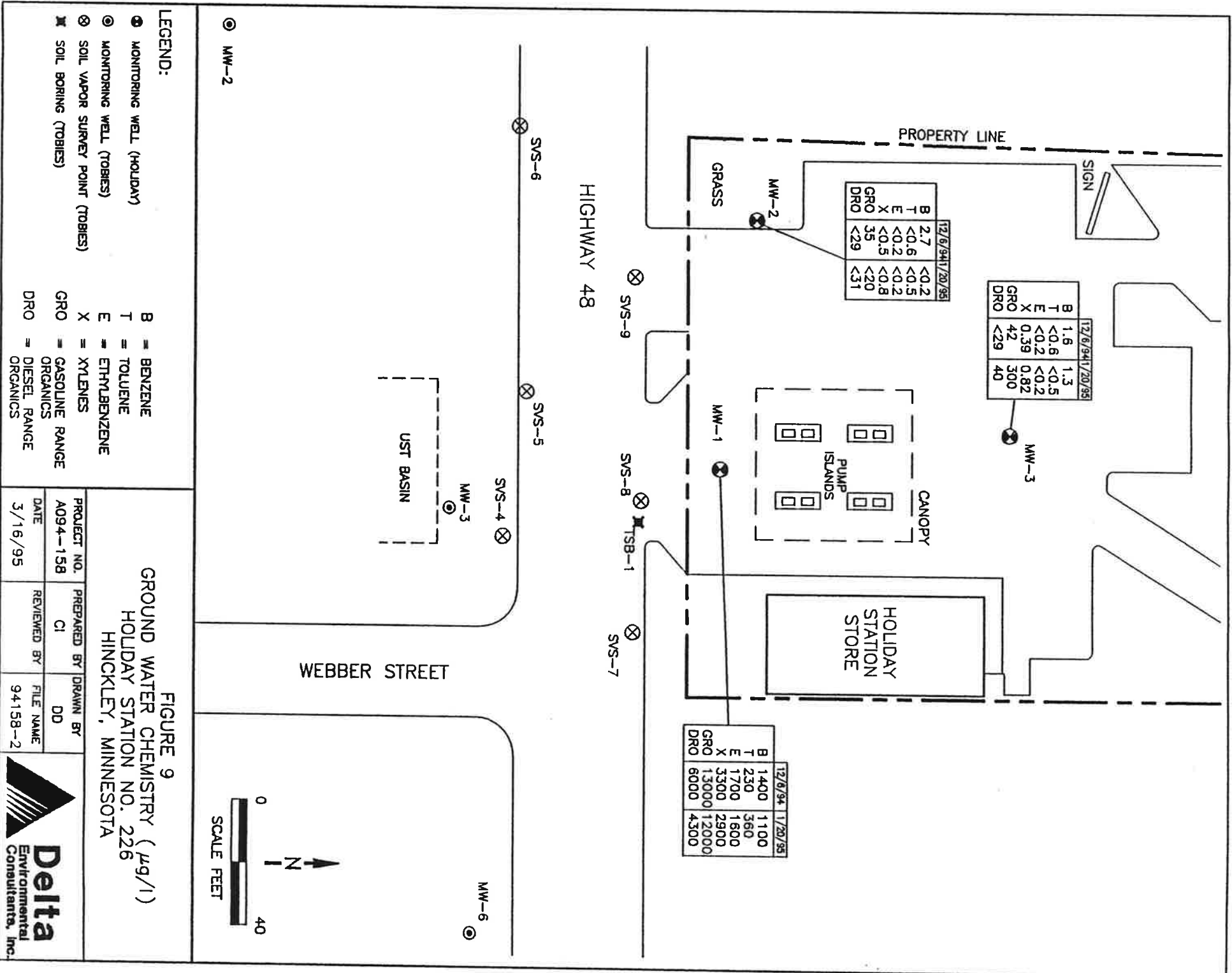
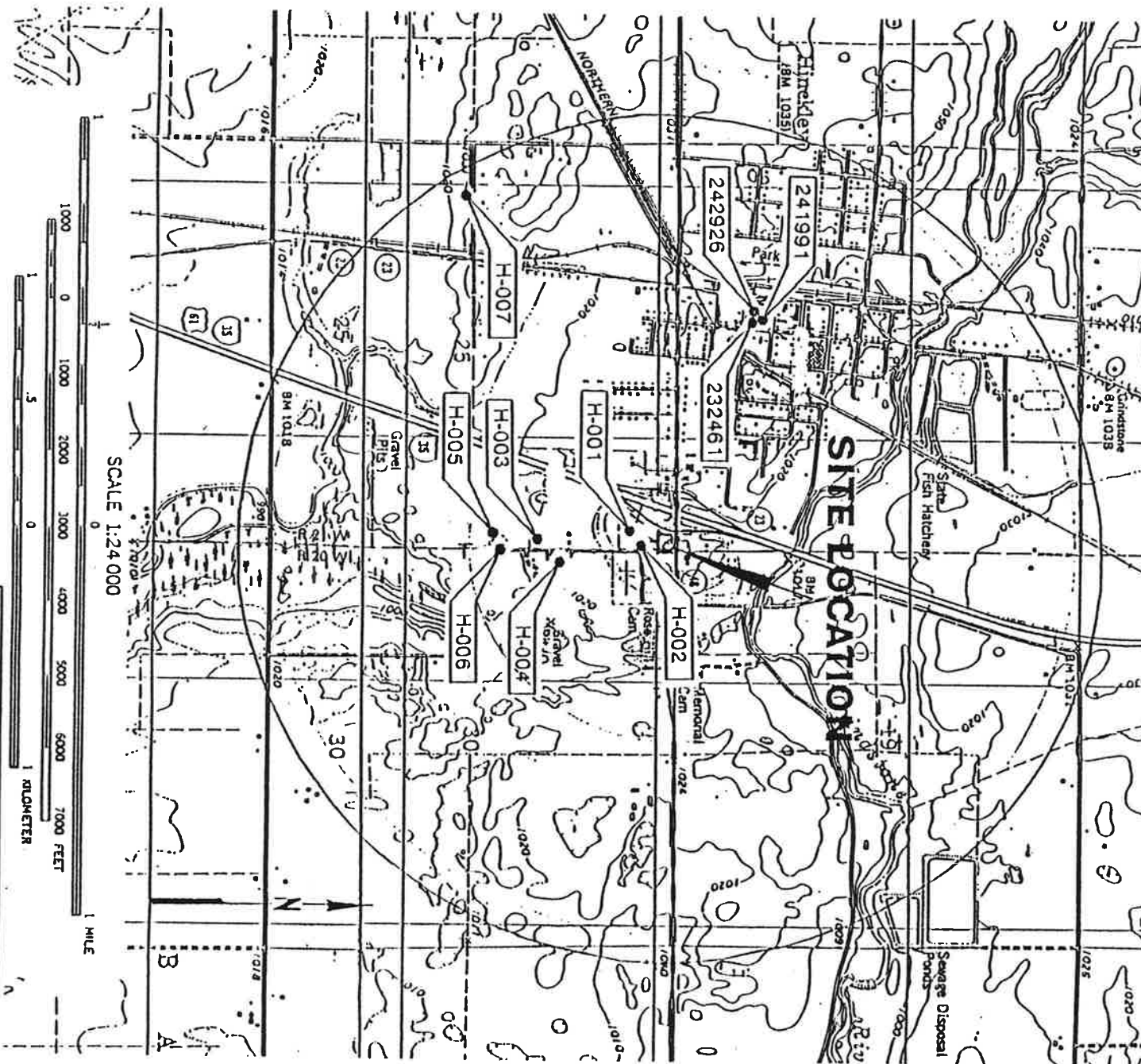


FIGURE 9
GROUND WATER CHEMISTRY (µg/l)
HOLIDAY STATION NO. 226
HINCKLEY, MINNESOTA



HINCKLEY QUADRANGLE
MINNESOTA-PINE CO.

BEROUN QUADRANGLE
MINNESOTA-PINE CO.



ADOPTED FROM:
ENECOTECH ENVIRONMENTAL CONSULTANTS
BLOOMINGTON, MINNESOTA

FIGURE 10
WATER WELL LOCATIONS
HOLIDAY & TOBIES SITES
1-35 AND CO. RD. 48
HINCKLEY, MINNESOTA

LEGEND:

- WATER WELL LOCATIONS

PROJECT NO.	A094-158	PREPARED BY	
DATE	3/7/95	REVIEWED BY	



APPENDIX A

APPENDIX A FIELD METHODOLOGIES

Soil Sampling

Soil sampling is done in accordance with ASTM:D 1586-84. Using this procedure, a 2 inch outside diameter, split-barrel sampler is driven into the soil by a 140 pound weight falling 30 inches. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as the penetration resistance, or the "N" value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils.

Soil samples recovered from the split-spoon samples are screened immediately using a portable photoionization detector to determine the relative contamination of the sample. A portion of the split spoon sample is then collected and stored in a clean, glass jar for soil vapor headspace measurements and lithologic description. The collection of soil vapor headspace measurements involves sealing the jar mouth with aluminum foil and capping the jar. After the boring is completed and the samples have equilibrated to similar temperatures, the cap is removed from the jar and the aluminum foil is punctured with the photoionization detector probe. This allows for the measurement of volatile organic vapors, which may have accumulated in the headspace of the sample jar.

Water Level Measurements

All ground water level measurements are obtained by using an electronic measuring device, which indicates when a probe is in contact with the ground water in the well. Measurements are obtained by lowering the device into the well until it indicates that the water surface has been encountered and by measuring the distance from the top of the inside riser pipe to the probes. All of the measurements are recorded to the nearest 0.01 foot; however, the manufacturer's reported accuracy for the instrument is 0.04 foot.

Groundwater Sampling

Monitoring wells are sampled from the suspected cleanest to the most contaminated. The following describes the protocol for sampling a monitoring well.

Field Protocol

- Step 1: Measure the water level.
- Step 2: Develop the monitoring well with a dedicated bailer. A minimum of three to five well bore water volumes are evacuated from the monitoring well prior to sampling.
- Step 3: Collect water samples. Water samples are collected using the dedicated stainless-steel bailer.
- Step 4: Water samples are stored and transported to the specified laboratory, following all documentation, preservation, and chain of custody procedures.
- Step 5: Clean the equipment. Water level measurement equipment is cleaned with denatured alcohol and deionized water rinse.

Upon completion of a soil or ground water sampling, a chain-of-custody is initiated. Chain-of-custody records include the following information: project name and location, project number, shipped by, shipped to, suspected hazard, sampling point and location, field identification number, date and time collected, sample type, number of containers, analysis required, and the sampler's signature. As few people as possible handle the samples.

The chain-of-custody records are shipped with the samples to the laboratory. Upon arrival at the laboratory, the sample is checked in by the appropriate laboratory personnel. Laboratory identification numbers are noted on the chain-of-custody record. A copy of the chain-of-custody is turned over to the laboratory project manager. Upon completion of the laboratory analysis, the completed chain-of-custody record is returned to the Delta project manager.



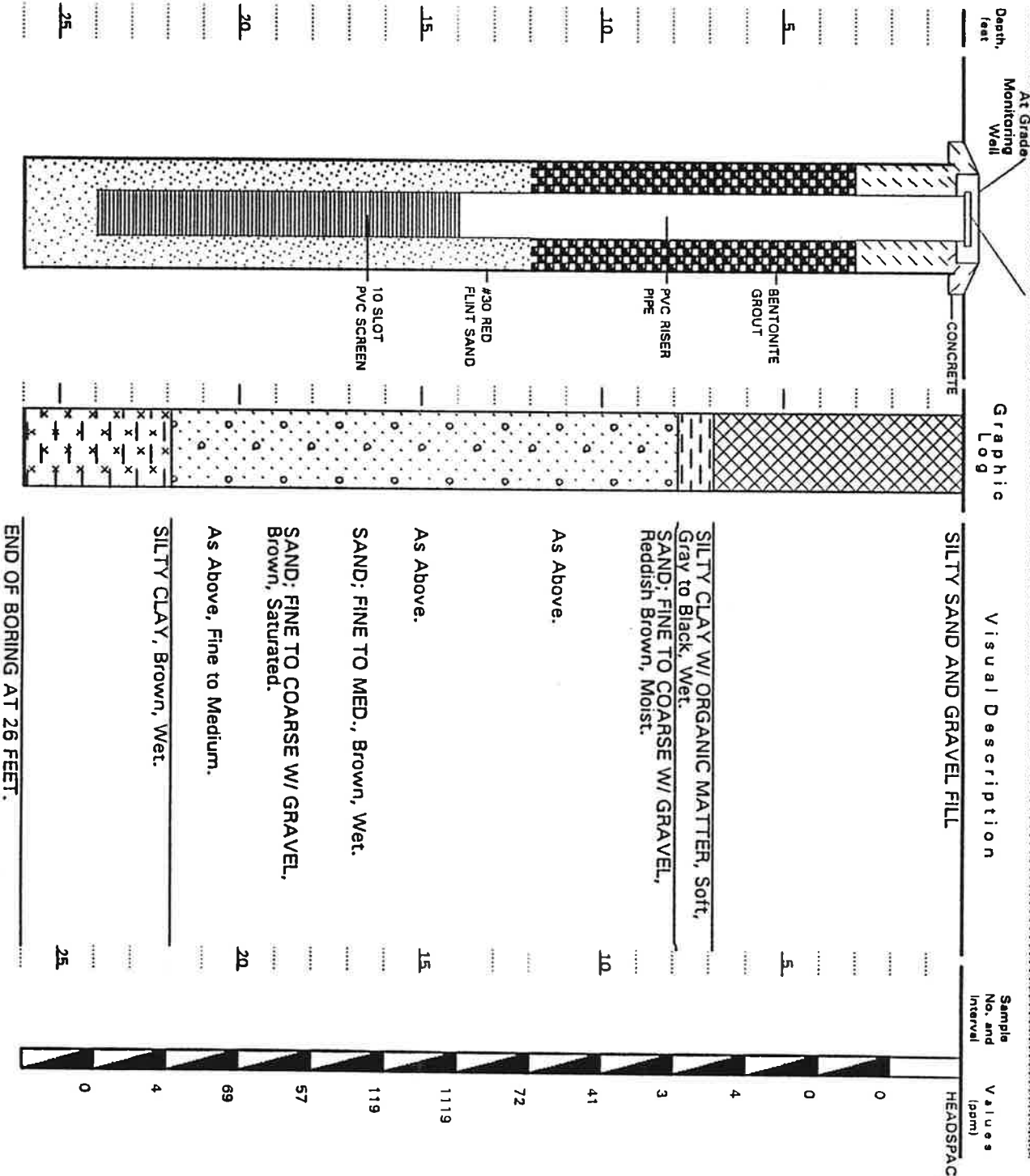
WELL CONSTRUCTION LOG

BORING/WELL NO. MW-1/SB1	LOCATION		
PROJECT NO./NAME A094-158/HOLIDAY STORE #226	HINCKLEY, MINNESOTA		
DRILLING CONTRACTOR/DRILLER THEIN WELL/NATHAN	APPROVED BY		
GEOLOGIST/OFFICE M. TEMINKLE/ST. PAUL	SIZE/TYPE OF BIT	SAMPLING METHOD	START/FINISH DATE
DRILLING EQUIPMENT/METHOD MOBILE DRILL/HSA		2" SPLIT BARREL	11/29/94-11/29/94
WELL INSTALLED? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	CASING MAT./DIA. PVC 2"	SCREEN: TYPE SLOTTED	MAT. PVC
ELEVATION OF: (FT. ABOVE M.S.L.)	GROUND SURFACE 1031.11	TOP OF WELL CASING	TOP & BOTTOM SCREEN
		LENGTH 10'	DIA. 2"
		GW SURFACE	SLOT SIZE 10 SLOT
			DATE

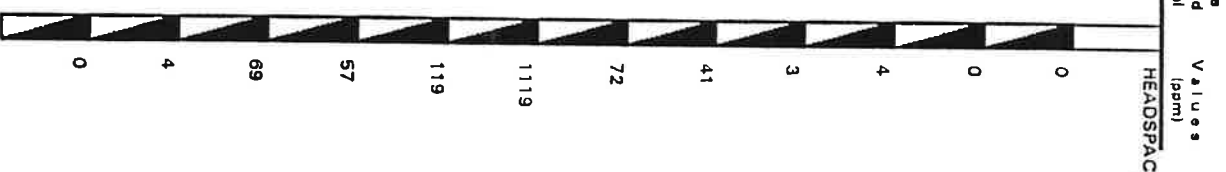
WELL CONSTRUCTION

LITHOLOGY

SAMPLING DATA



END OF BORING AT 26 FEET.





SOIL BORING LOG



BORING/WELL NO. SB-2	LOCATION	START/FINISH DATE	
PROJECT NO./NAME A094-158/HOLIDAY STORE #226	HINCKLEY, MINNESOTA	11/29/94-11/29/94	TOTAL DEPTH 21.0
DRILLING CONTRACTOR/DRILLER THEIN WELLMATHAN	APPROVED BY	SAMPLING METHOD 2" SPLIT BARREL	
GEOLOGIST/OFFICE M. TEWINKLE/ST. PAUL	SIZE/TYPE OF BIT	HEADSPAC	
DRILLING EQUIPMENT/METHOD MOBILE DRILL/HSA			

LITHOLOGY

SAMPLING DATA

Depth, feet	Graphic Log	Visual Description	Sample No. and Interval	Penetration Rate (Blows/)	Values (ppm)
.....		SAND: FINE TO COARSE W/ GRAVEL	.....	.....	0
.....		SAND: MED. TO COARSE W/ GRAVEL, Reddish Brown, Dry.	.....	.....	214
<u>5</u>			
.....			
.....			
<u>10</u>		As above, Moist.	.....	.....	184
.....			
.....			
<u>15</u>		As above, Gray, Wet.	.....	.....	121
.....			
.....			
<u>20</u>		As above.	.....	.....	17
.....			

HIT OBSTRUCTION, BORING ABANDONED AT 21 FEET.

WELL CONSTRUCTION LOG

BORING/WELL NO.: **MW-2/SB3**
 PROJECT NO./NAME: **A094-158/HOLIDAY STORE #226**
 DRILLING CONTRACTOR/DRILLER: **THEIN WELL/NATHAN**
 GEOLOGIST/OFFICE: **M. TEWINKLE/ST. PAUL**

DRILLING EQUIPMENT/METHOD: **MOBILE DRILL/HSA**

LOCATION: **HINCKLEY, MINNESOTA**
 APPROVED BY: _____

SIZE/TYPE OF BIT: _____
 SAMPLING METHOD: **2" SPLIT BARREL**
 START/FINISH DATE: **11/29/94-11/30/94**

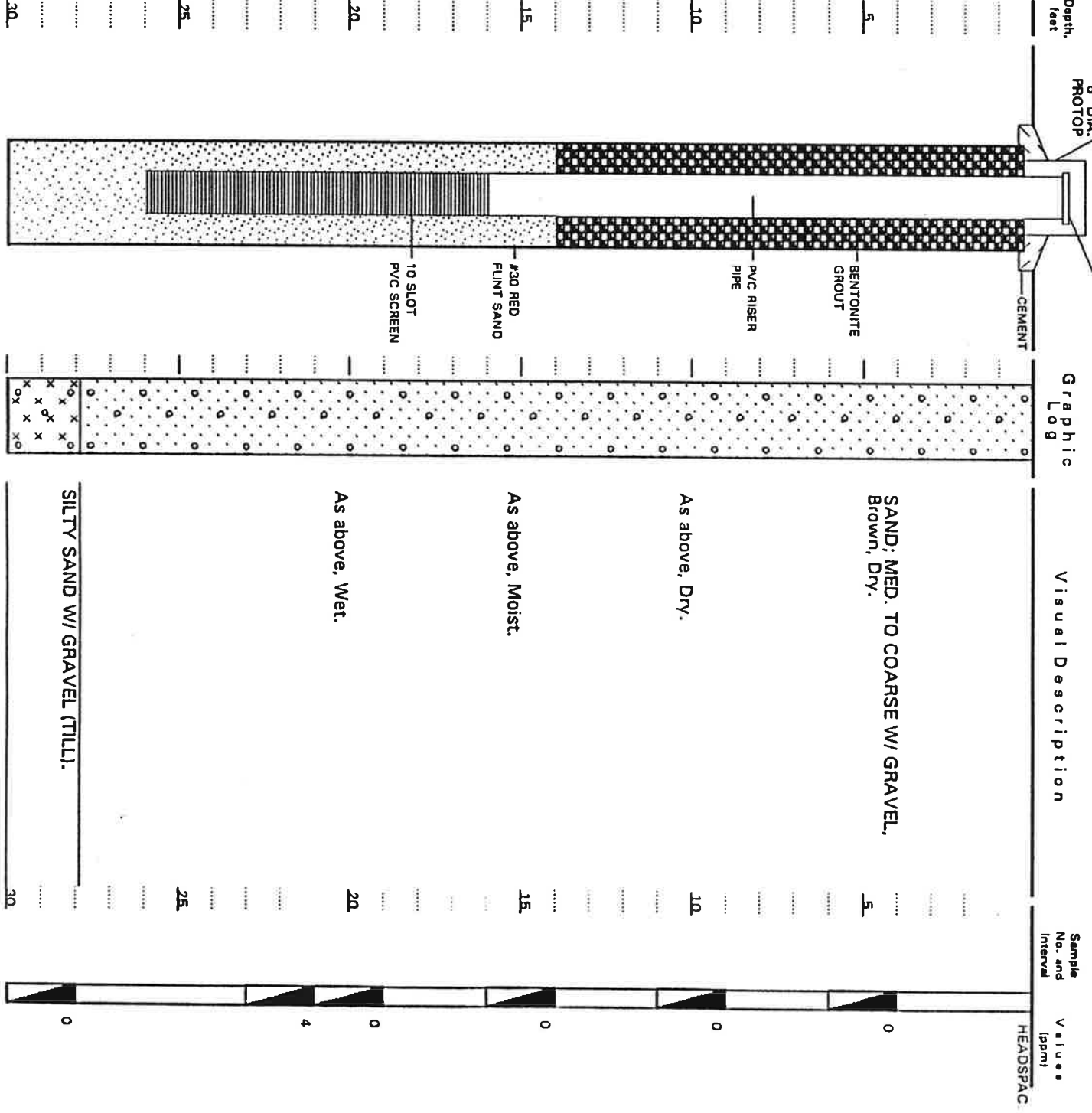
WELL INSTALLED? YES NO
 CASING MAT./DIA.: **PVC 2"**

ELEVATION OF: **TOP OF WELL CASING** **1034.02**

SCREEN: **TYPE SLOTTED**

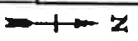
MAT. PVC **TOP & BOTTOM SCREEN**
 LENGTH **10'** DIA. **2"**
 SLOT SIZE **10 SLOT**
 GW SURFACE DATE: _____

WELL CONSTRUCTION LITHOLOGY SAMPLING DATA





SOIL BORING LOG



BORING/WELL NO. SB-4	LOCATION	HINCKLEY, MINNESOTA	SAMPLING METHOD 2" SPLIT BARREL	START/FINISH DATE
PROJECT NO./NAME A094-158/HOLIDAY STORE #226	DRILLING CONTRACTOR/DRILLER THEIN WELL/NATHAN			APPROVED BY M. TEWINKLE/ST. PAUL GEOLOGIST/OFFICE	11/30/94-11/30/94
DRILLING EQUIPMENT/METHOD MOBILE DRILL/HSA		SIZE/TYPE OF BIT	TOTAL DEPTH 23.0	

LITHOLOGY

SAMPLING DATA

Depth, feet	Graphic Log	Visual Description	Sample No. and Interval	Penetration Rate (Blows/)	Values (ppm)	HEADSPAC
.....		SILTY SAND FILL W/ GRAVEL AND COBBLES	.....	.....	.....	.....
<u>5</u>		SAND: FINE TO MED. Brown, Dry.	.....	.....	.....	0
.....		As above, Black (possible staining).	.....	.....	.....	39
<u>10</u>		As above, Brown, Moist.	.....	.....	.....	31
.....		SAND: FINE GRADING INTO SILT W/ SAND, Wet.	.....	.....	.....	10
<u>15</u>		SAND: FINE GRADING INTO SILT W/ SAND, Wet.	.....	.....	.....	10
.....		SAND: FINE GRADING INTO SILT W/ SAND, Wet.	.....	.....	.....	10
<u>20</u>		SAND: FINE GRADING INTO SILT W/ SAND, Wet.	.....	.....	.....	5
.....		SAND: FINE GRADING INTO SILT W/ SAND, Wet.	.....	.....	.....	5



WELL CONSTRUCTION LOG

BORING/WELL NO. **MW-3/SB5**

LOCATION

PROJECT NO./NAME
A094-158/HOLIDAY STORE #226

DRILLING CONTRACTOR/DRILLER
THEIN WELL/MATHAN

HINCKLEY, MINNESOTA

GEOLOGIST/OFFICE
M. TEWINKLE/ST. PAUL

APPROVED BY

DRILLING EQUIPMENT/METHOD

SIZE/TYPE OF BIT

SAMPLING METHOD

START/FINISH DATE

MOBILE DRILL/HSA

SCREEN:

TYPE SLOTTED

2" SPLIT BARREL

WELL INSTALLED?

YES NO

CASING MAT./DIA.
PVC 2"

TOP OF WELL CASING

MAT. PVC

LENGTH 10'

DIA. 2"

SLOT SIZE 10 SLOT

ELEVATION OF:

GROUND SURFACE

1029.71

TOP & BOTTOM SCREEN

GW SURFACE

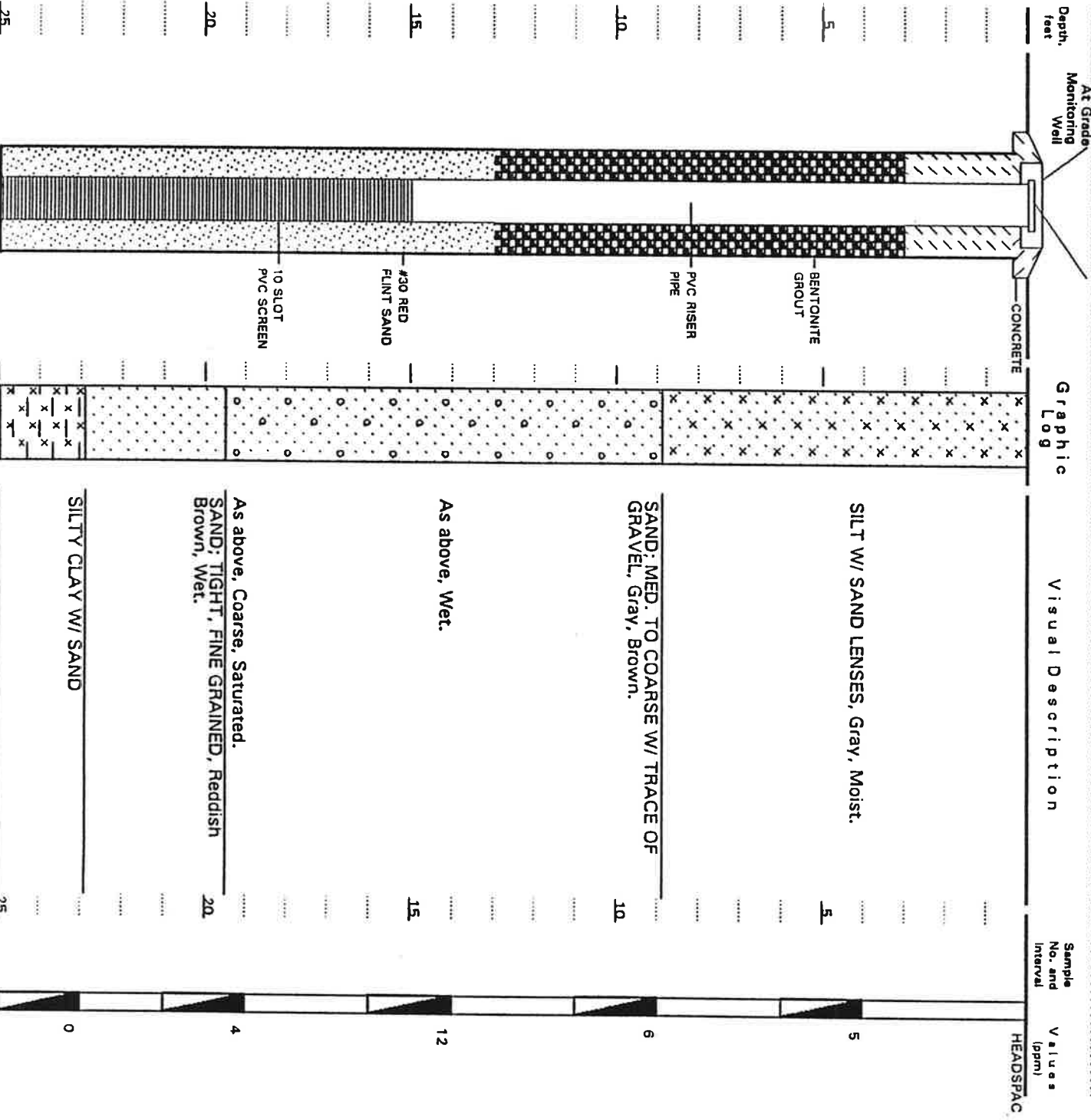
DATE

(FT. ABOVE M.S.L.)

WELL CONSTRUCTION

LITHOLOGY

SAMPLING DATA



25

25

20

20

15

15

10

10

5

5

HEADSPAC

Sample No. and Interval

Values (ppm)



APPENDIX C

HYDROGEOLOGIC SETTING AND GROUND WATER CONTAMINATION WORKSHEET

Fact Sheet #24

Minnesota Pollution Control Agency

LUST Cleanup Program

April 1993

Complete this worksheet for all sites with ground water contamination. The worksheet has several purposes. It summarizes remedial investigation (RI) results and conclusions for use by Minnesota Pollution Control Agency (MPCA) staff when reviewing the site to determine whether corrective action will be required to remediate ground water contamination. It also provides supplementary information on investigation, design, and reporting requirements (presented in bold type) for sites with ground water contamination. Review this worksheet and all other relevant MPCA documents when developing RI work plans to ensure the investigation meets all RI requirements.

Base answers to the following questions on the results of the ground water receptor survey, RI activities, and published geologic literature. Answer the questions in the space provided and attach additional sheets, if necessary.

Include this worksheet as an appendix to the RI/Corrective Action Design (CAD) report. RI/CAD reports submitted without this worksheet or with an incomplete worksheet will be rejected as inadequate.

LEAK # 7487
SITE NAME *Holiday Station No. 226*
SITE LOCATION *Hinckley, Minnesota*

1. Geology. Describe the geologic units in which ground water has been impacted by the petroleum release, the thickness, and estimated lateral extent of the impacted unit.

Geologic description: *Glacial outwash sands and gravels.*

Thickness of impacted unit: *Approximately 20 feet*

Estimated lateral extent: *Continuous to approximately 800 south of the site; unknown further south.*

2. Aquifer parameters. At all sites with ground water monitoring wells, include an estimate of hydraulic conductivity, and provide estimates of the ground water velocity in the impacted unit. Explain how you arrived at these estimates. Also provide estimated values for porosity, flow direction, and horizontal and vertical gradients.

Hydraulic conductivity (K) value is specific to the Tobies site, which is hydrogeologically similar to the Holiday site. Other aquifer parameters are calculated for the Holiday site, using the K value provided for the Tobies site.

K = 4.04 ft/day porosity = 0.35 dh/dl = 0.02 to 0.06
v = <0.7 ft/day flow direction = SW dv/dl = N/A

3. Maximum concentrations (on site). Please list the following maximum contaminant concentrations (ppb) for contaminants detected on site:

Benzene	1,400 ug/l	Total Hydrocarbons	13,000 ug/l
(Well No. MW-1, Date 12/6/94)		(Well No. MW-1, Date 12/6/94)	