

Patch II
10-0133

2002.237

South Dakota Spill Report Form

Dept. of Ag. Case No. _____

7518

State Case No.: 2002.237

Reported: (mm/dd/yy) <u>10/17/02</u>		Time: _____		Recorded By: <u>m. Entos</u>	
A. REPORTER	Reported By: <u>Jerrey Zutz</u>				
	Organization Name: <u>Geotek</u>				
	Organization: <input type="checkbox"/> discharger <input type="checkbox"/> public <input type="checkbox"/> state <input type="checkbox"/> local <input type="checkbox"/> federal				
	Address: _____				
	City: _____		County: _____		State: _____
B. DISCHARGER (Responsible Party)	Name: <u>Casey's General Store - Amy Hoppman</u>				
	Address: <u>3084 P.O. Box 3001</u>				
	City: <u>Ankeny</u>		County: _____		State: <u>IOWA</u>
	Zip: <u>50021</u>		Phone: (<u>515</u>) - <u>965-6231</u>		
	As Above in B <input type="checkbox"/> Street or Approx. Location: <u>Casey's General Store</u>				
C. INCIDENT LOCATION	<u>701 North main</u>				
	Survey Description: _____ Sec _____ T _____ R _____				
	City: <u>Mitchell</u>		County: <u>DAVISON</u>		State: _____
	Spill Date: (mm/dd/yy) <u>unknown</u>				
D. DATE	Spill Time: _____				
	Material Type (Code/Name): <input type="checkbox"/> hazardous substance <input type="checkbox"/> material unknown		Quantity Spilled		Spilled in Water
	<input type="checkbox"/> oil <input type="checkbox"/> other				
	<u>Petroleum</u>		<u>Unkn.</u>		
E. MATERIAL					Units (Circle 1)
					lb. bbl. gal. oth
F. SOURCE	Source of Spill: <input type="checkbox"/> AST <input checked="" type="checkbox"/> UST <input type="checkbox"/> railway <input type="checkbox"/> vessel <input type="checkbox"/> fixed facility <input type="checkbox"/> pipeline <input type="checkbox"/> highway <input type="checkbox"/> air transport				
	Description: <u>Contamination found during replacement of fuel lines</u>				
G. MED.	Medium Affected: <input type="checkbox"/> air <input checked="" type="checkbox"/> land <input type="checkbox"/> water <input type="checkbox"/> groundwater <input type="checkbox"/> within facility only				
	Waterway Affected: _____				
H. CAUSE	Reported Cause: <input type="checkbox"/> transportation accident <input type="checkbox"/> operational error <input type="checkbox"/> dumping <input type="checkbox"/> other _____				
	<input type="checkbox"/> equipment failure <input type="checkbox"/> natural phenomenon <input type="checkbox"/> unknown _____				
I. DAM.	Description: _____				
	Damages: no. of injuries _____ no. of deaths _____ property damage > \$50,000 _____				
J. ACTIONS	<input type="checkbox"/> Evacuation <input type="checkbox"/> Response Action Taken: _____				

K. NOTIFIED	Responding Agency: <input type="checkbox"/> DENR <input type="checkbox"/> DGA <input type="checkbox"/> discharger <input type="checkbox"/> federal <input type="checkbox"/> EPA <input type="checkbox"/> local				
	Agencies Notified: _____				
L. COMMENTS	Comments: _____				



2002.237
DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

October 25, 2002

Amy Hoppman
Casey's General Store
P.O. Box 3001
Ankeny, IA 50021

SUBJECT: Department of Environment and Natural Resources File Number – 2002.237 -
pertaining to the petroleum release from the underground storage tanks at Casey's
General Store, 701 N. Main in Mitchell, SD.

Dear Ms. Hoppman:

The Department of Environment and Natural Resources is contacting you regarding the above referenced release. This office has recorded available information about this release on an initial spill report form (enclosed for your review). The procedures for assessment and remediation of a release such as this were developed to prevent pollution of the waters of the State. In this situation, the following steps must be taken:

- By November 22, 2002, please complete and return the attached Written Contamination Incident Follow Up Report form (**Make sure that you fill in the Latitude and Longitude** or provide a legal description of the spill site- this is a standardized form so some questions will not apply to this situation, just skip those questions).
- In addition, please provide a copy of your consultant's report for this site.

The department has assigned Scott Bickler as the project manager of this case. Once Scott has reviewed all of the information on this case he will contact you to discuss any further actions that may be needed. If you have any questions, please contact Scott Bickler at (605) 362-3500 or me. Thank you for your cooperation and assistance in protecting the quality of the water resources of South Dakota.

Sincerely,

Kim McIntosh
Ground-Water Quality Program
Phone: (605) 773-3296

Enclosures

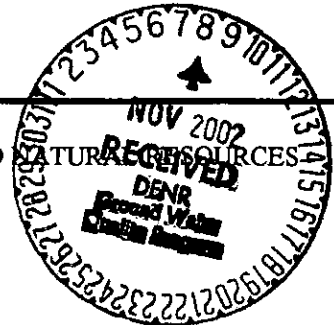
cc: Dennis Rounds, Petroleum Release Compensation Fund, Pierre
Allan Miller, Davison County Emergency Management
Jerry Zutz, GeoTek, Sioux Falls

SB

DENR FILE #: 2002.237

WRITTEN CONTAMINATION INCIDENT FOLLOW-UP REPORT

(Page 1 of 2)

RETURN
COMPLETED
FORM
TOSOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
GROUND WATER QUALITY PROGRAM
JOE FOSS BUILDING
523 EAST CAPITOL AVENUE
PIERRE SD 57501-3181

SITE NAME: CASEY'S GENERAL STORE
SPILL LOCATION: Mitchell, South Dakota
LATITUDE/LONGITUDE: 43° 42 min 57 sec 98° 1 min 33 sec
LEGAL LOCATION (TOWNSHIP/RANGE): NW 1/4 section 22 Township 103 North
Range 60 West
RESPONSIBLE PARTY: CASEY'S GENERAL STORE, INC
MAILING ADDRESS: ONE CONVENIENCE Blvd
CITY: Ankeny, Iowa 50021
TELEPHONE: 515-965-6238 (HOME) _____ (WORK) _____
DATE OF SPILL OR WHEN DETECTED: October 9, 2002 TIME: _____
WHAT WAS THE DURATION OF THE RELEASE? Unknown
SUBSTANCE(S) RELEASED: Unleaded gasoline
QUANTITY RELEASED: Unknown
CHEMICAL NAME: Unleaded gasoline CAS #: _____

IS SUBSTANCE ON THE "SARA 302 LIST"? YES _____ NO _____ DON'T KNOW X
"CERCLA HAZARDOUS SUBSTANCE LIST"? YES _____ NO X DON'T KNOW _____
"SOUTH DAKOTA REGULATED SUBSTANCE"? YES _____ NO _____ DON'T KNOW X
CONSULTANT: GEOTEK ENGINEERING - JERRY ZUTZ
IDENTIFY KNOWN HEALTH RISKS: NA
WHAT PERTINENT MEDICAL ADVICE WAS ISSUED? NA
LAND USE (RESIDENTIAL, INDUSTRIAL, RURAL, OTHER): Convenience Store
UTILITIES INVESTIGATED (WATER, SEWER, TELEPHONE, CATV, STORM WATER, OTHER): NONE

FOLLOW-UP REPORT CONTINUED

(Page 2 of 2)

DENR FILE #: 2002.237

ENVIRONMENTAL MEDIA IMPACTED (SURFACE SOIL, SUBSURFACE SOIL > 3' BELOW GROUND, GROUND WATER, SURFACE WATER, INDOOR AIR, OUTDOOR AIR, ETC.):

Surface Soil ; Subsurface Soil > 3'

DISTANCE TO AND NAME OF CLOSEST SURFACE WATER OR DRAINAGE:

1/2 mile southwest to Dry Creek

DEPTH/DISTANCE TO AND NAME OF CLOSEST AQUIFER: 60 ft. to Niobrara

DEPTH/DISTANCE TO NEAREST DRINKING WATERWELL: Unknown

CUBIC YARDS OF SOIL EXCAVATED/TREATED: 70 yards

WAS FREE PHASE OR POOLED PRODUCT PRESENT? NO

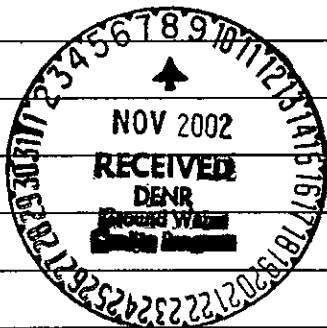
DIMENSIONS OF EXCAVATION: SEE GEOTEK REPORT

CONTAMINATED MATERIALS DISPOSAL SITE: Soil Tec LLC.

DATE MATERIAL WAS DISPOSED OF: October 9-10, 2002

IMMEDIATE CORRECTIVE ACTION TAKEN AND ADDITIONAL WORK PLANNED:

impacted soil was excavated
additional assessment planned.



SIGNATURE OF RESPONSIBLE PARTY: _____

DATE: 10/28/02



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

August 31, 2007

Jill Reams-Widder
Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021 - 8045

RE: No Further Action at Casey's General Store, 701 North Main Street, Mitchell, SD - **DENR #2002.237**

Dear Ms. Reams-Widder:

Staff from the South Dakota Department of Environment and Natural Resources (DENR) have reviewed the available information on the petroleum release at the above referenced property in Mitchell, South Dakota, and determined active cleanup can stop. As a result of this determination, DENR is placing this release case in the No Further Action category. This release has not been cleaned to state soil or ground water quality standards; but DENR has determined, based on information submitted by your consultant there is no current risk to human health or the environment.

It should be noted soil contaminated above department action levels may exist on site. If construction activities result in contaminated soil being removed it must be properly disposed at a permitted facility.

In addition if future exposure pathways are created or if problems arise from remaining contamination associated with this release, Casey General Stores will be responsible for doing any additional assessment or clean up activities. Casey General Stores may also be responsible for further assessment and cleanup actions if there is a change in the use of this property or adjacent affected properties that increases the risk to human health and the environment from contamination associated with this release. The No Further Action designation will be recorded in DENR's release database and can be found at our internet website.

All monitoring wells associated with this site must be properly abandoned in accordance with DENR's Well Construction Standards ARSD 74:02:04 and written documentation must be submitted to DENR showing the wells have been properly abandoned. Prior to well abandonment any free phase product encountered must be removed and properly disposed.

If you have questions or concerns about your site's No Further Action designation, please contact Scott Bickler of my staff at (605) 362-3500. Thank you for your cooperation in protecting South Dakota's water resources.

Sincerely,

Steven M. Pirner
Secretary

cy: Jerry Zutz, Geotek Engineering
Dennis Rounds, SD Petroleum Release Compensation Fund
James Montgomery, Davison County Emergency Management
Scott Bickler, DENR - SF



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

August 28, 2007

OK
BM 8/30/07

Memorandum To: Bill Markley

RE: Proposed No Further Action at Casey's General Store, 701 North Main Street., Mitchell, SD
DENR File # 2002.237

General

The site is located at the northwest corner of the intersection of North Main and West 7th Ave. in the central part of Mitchell. At the time the release was discovered the site consisted of a convenience store building, a dispenser island, and two gasoline underground storage tanks (USTs). Contamination was discovered in October 2002 during the replacement of fuel lines.

Surrounding land use is generally commercial. A private residence is located to immediately to the west of the site. An apartment complex is also located to the west of the site.

Assessment/Corrective Actions

Contamination at the property was found during construction activities to upgrade the distribution piping. The old dispensers and piping were removed and new dispensers, piping and canopy were installed. Approximately, 70 cubic yards of material were removed during the upgrading excavation. Since complete removal of the contamination was not achieved by excavation additional assessment work was done.

Five soil borings were drilled at the site in April 2003. Two of these borings were converted to monitoring wells. Following the installation of the wells free phase product was measured. As a result three additional wells were installed.

To address the free phase product additional excavation was done in November 2005. This excavation removed 420 in-place cubic yards of soil.

over excavation ground water monitoring was continued to verify the absence of free phase product and to verify a stable plume. These monitoring events have shown favorable results.

Geology

The state Geological Survey has mapped the area as being underlain by glacial till. Glacial till is a mixture of boulders, sand, silt and clay. A bedrock formation lies approximately 1,000 feet below the site.

Soil borings drilled at the site show the subsurface to consist of silty clay and silty sand to about nine feet below grade. Below that depth lean clay with some lenses of sand and silty clay was encountered. The deepest soil borings extended to 17 feet below grade.

Ground Water

Although the site is not considered to overlay an aquifer ground water encountered. Ground water monitoring began in April 2003 and continued until June 2007. The number of wells sampled and the sampling frequency have varied over time. Contaminant concentrations have been decreasing or staying steady.

The depth of ground water has ranged from a high of 7.68 feet to a low of 10.48 feet below ground surface. The ground water flow direction has generally been to the south.

Receptor Survey

Water lines. There is a ten inch diameter iron water main is located along the north side of West 7th Street. A six inch PVC water main line is located under North Main Street to the east. The service line going to Casey's is believed to be copper. The service lines are reported to be buried at a depth of about five to six feet below grade.

Sanitary sewer lines. There is a 12 inch clay tile sewer main is located to the east under North Main Street. There is also a 10 inch clay tile sewer main in the alley to the west of the site. The main to the east is reported to be buried about 9 ½ feet below the ground surface. The main to the west is reported to be buried about 13 feet below the ground surface.

Storm sewer lines. There is a storm sewer catch basin near the southeast corner of the site. The storm sewer lines are believed to be of concrete composition, relatively shallow (five feet) and located to the east under North Main Street.

Other utilities. There are other buried electric lines in the area of contamination. There are other utilities (electric, telephone, natural gas) outside the area of contamination. These lines are suspected to be buried about two feet deep.

Vapor survey. A vapor survey of the nearest potential subsurface receptors was conducted on April 16, 2003 of nearby sanitary sewer manholes. Elevated PID readings (>1.0) were not detected.

Nearby structures. The site building does not have a basement. The house and apartment building to the west of the site are reported to have a basement.

Vicinity ground water use. No shallow wells are known to exist in the area. The site is not in a well head protection area. The city of Mitchell receives its water from Lake Mitchell, which is located about two miles northeast of the site.

Conclusion and Recommendation

- Site is not over a shallow aquifer or in well head protection area.
- Source of the release has been eliminated.
- Free product has been eliminated.
- Ground water and soil contamination above state standards still remains
- Monitoring has shown a stable to decreasing contaminant trend is present
- No completed exposure pathways have been identified.

Based on this information there appears to be no potential risks to human health or the environment. Therefore it is recommended this site be placed in the No Further Action status.



Scott Bickler
Ground-Water Quality Program



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773
1-800-354-5512 www.geotekeng.com

SB
2002.237

June 26, 2007

Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-8045

Attn: Ms. Jill Reams-Widder

Subj: Groundwater Monitoring Event
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237
PRCF #6643



Dear Ms. Reams-Widder:

Introduction

This correspondence presents the results of the Groundwater Monitoring Event for the referenced project. We are transmitting one copy of our report. Additional copies are being sent as noted below.

Purpose and Scope

The scope of our work was limited to:

1. Mobilizing an environmental technician to the site on June 13, 2007.
2. Checking monitoring well MW5 for the presence and thickness of free phase petroleum product.
3. Measuring depth to groundwater in monitoring wells (MW1, & MW3-6).
4. Obtaining a groundwater sample from MW6 and submitting it to a chemistry laboratory for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline analysis.

5. Preparing a semi-annual report presenting our data, opinions, and recommendations.

Authorization

This work was authorized by Casey's General Stores, Inc. acceptance of our August 15, 2006 amendment to the October 1, 2002 contract (SD Petroleum Release Compensation Fund (PRCF) review letters of September 5, 2006 and October 1, 2002 respectively).

Water/Product Level Measurements

Depth to groundwater was measured in the monitoring wells on June 13, 2007. Depth to groundwater was approximately 8' to 9' below grade. The monitoring well water level data is presented in Table 1. A groundwater elevation map for the June 13, 2007 event is attached as Figure 1. The groundwater gradient appears to be to the south. This is consistent with previous measurement events.

Free phase product was not measured in the wells checked on June 13, 2007. The previous product measurements are summarized on Table 1. The groundwater level is the highest measured at the site (period from 2003-2007). Less product thickness or occurrences would be expected with a higher water table.

Water Quality Sampling and Analysis

A groundwater sample was collected from monitoring well MW6 on June 13, 2007. The sample was submitted to a chemistry laboratory for hydrocarbon analysis. The sample was analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline. The water quality analytical data is provided on Table 2 and the recent laboratory report is attached. Groundwater from MW6 had 0.326 ppm TPH as gasoline. The South Dakota groundwater quality standards are not exceeded.

Discussion

The August 9, 2006 DENR letter required semi-annual groundwater monitoring. This is the second groundwater monitoring event since then. We understand DENR will review these results and determine what future actions are warranted, if any.

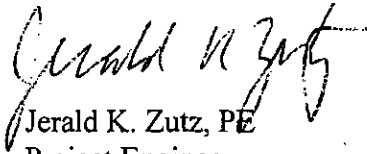
Standard of Care

Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and 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.

Remarks

GeoTek Engineering & Testing Services, Inc. appreciates the opportunity to have been of service on this project. Please contact us if you have questions concerning this report or project.

GeoTek Engineering & Testing Services, Inc.

A handwritten signature in black ink, appearing to read "Jerald K. Zutz", is written over the printed name.

Jerald K. Zutz, PE
Project Engineer
CPRR #R060

cc: DENR, Pierre, Mr. Doug Miller
DENR, Sioux Falls, Mr. Scott Bickler
PRCF, Pierre, Mr. John McVey
PRCF, Sioux Falls, Mr. Larry Headrick

TABLE 1
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW1	98.52	4-30-03	--	9.30	--	89.22
		7-28-03	--	9.12	--	89.40
		11-20-03	--	9.42	--	89.10
		2-12-04	--	9.87	--	88.65
		11-7-05	--	9.65	--	88.87
		6-26-06	--	9.26	--	89.26
		12-18-06	--	9.61	--	88.91
		6-13-07	--	8.71	--	89.81
MW2	97.66	4-30-03	8.68	9.31	0.63	88.35
		7-28-03	8.42	9.08	0.66	89.24
		11-20-03	8.80	9.08	0.28	88.86 *
		2-12-04	9.25	9.73	0.48	88.41 *
		11-7-05	9.10	9.47	0.37	88.56
MW3	97.28	7-28-03	--	8.32	--	88.96
		11-20-03	--	8.60	--	88.68
		2-12-04	--	8.93	--	88.35
		11-7-05	--	8.77	--	88.51
		6-26-06	--	8.41	--	88.87
		12-18-06	--	8.72	--	88.56
		6-13-07	--	7.68	--	89.60

Table Continued

TABLE 1 CONTINUED
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW4	98.31	7-28-03	--	9.32	--	88.99
		11-20-03	--	9.91	--	88.40
		2-12-04	--	10.48	--	87.83
		11-7-05	--	9.99	--	88.32
		6-26-06	--	9.42	--	88.89
		12-18-06	--	9.86	--	88.45
		6-13-07	--	8.92	--	89.39
MW5	97.12	7-28-03	--	8.36	--	88.76
		11-20-03	--	8.83	--	88.29
		2-12-04	--	9.27	--	87.85
		11-7-05	8.79	9.14	0.35	88.33
		6-26-06	--	8.43	--	88.69
		12-18-06	8.81	8.88	0.07	88.31
		6-13-07	--	7.86	--	89.26
MW6	97.00	6-26-06	--	8.34	--	88.66
		12-18-06	--	8.91	--	88.09
		6-13-07	--	7.77	--	89.23

Notes:

Top of riser elevations referenced the floor of the building (arbitrary datum).

See Figure 1 for well locations and estimated groundwater contour map.

* = trace of product bailed; new absorbent sock installed.

TABLE 2
GROUNDWATER SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Well Number	Date	Benzene	Toluene	Ethyl- Benzene	Xylenes	MTBE	TPH as Gasoline
MW1	4-30-03	0.010	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	0.534	<0.002	<0.002	<0.005	<0.002	0.830
	2-12-04	0.071	<0.002	<0.002	<0.005	<0.002	<0.100
MW3	7-28-03	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	2-12-04	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
MW4	7-28-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	2-12-04	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
MW5	7-28-03	3.70	7.57	0.20	2.89	<0.02	33.00
	11-20-03	5.04	4.39	1.01	2.58	<0.02	23.70
	2-12-04	3.700	4.080	0.820	0.320	0.042	20.500
MW6	6-26-06	0.009	0.013	0.004	<0.005	<0.002	5.670
	12-18-06	0.010	<0.002	0.003	0.005	<0.002	3.800
	6-13-07	<0.002	<0.002	<0.002	<0.005	<0.002	0.326
SDGWQS		0.005	1	0.7	10		10

Notes: All values in parts per million (ppm).

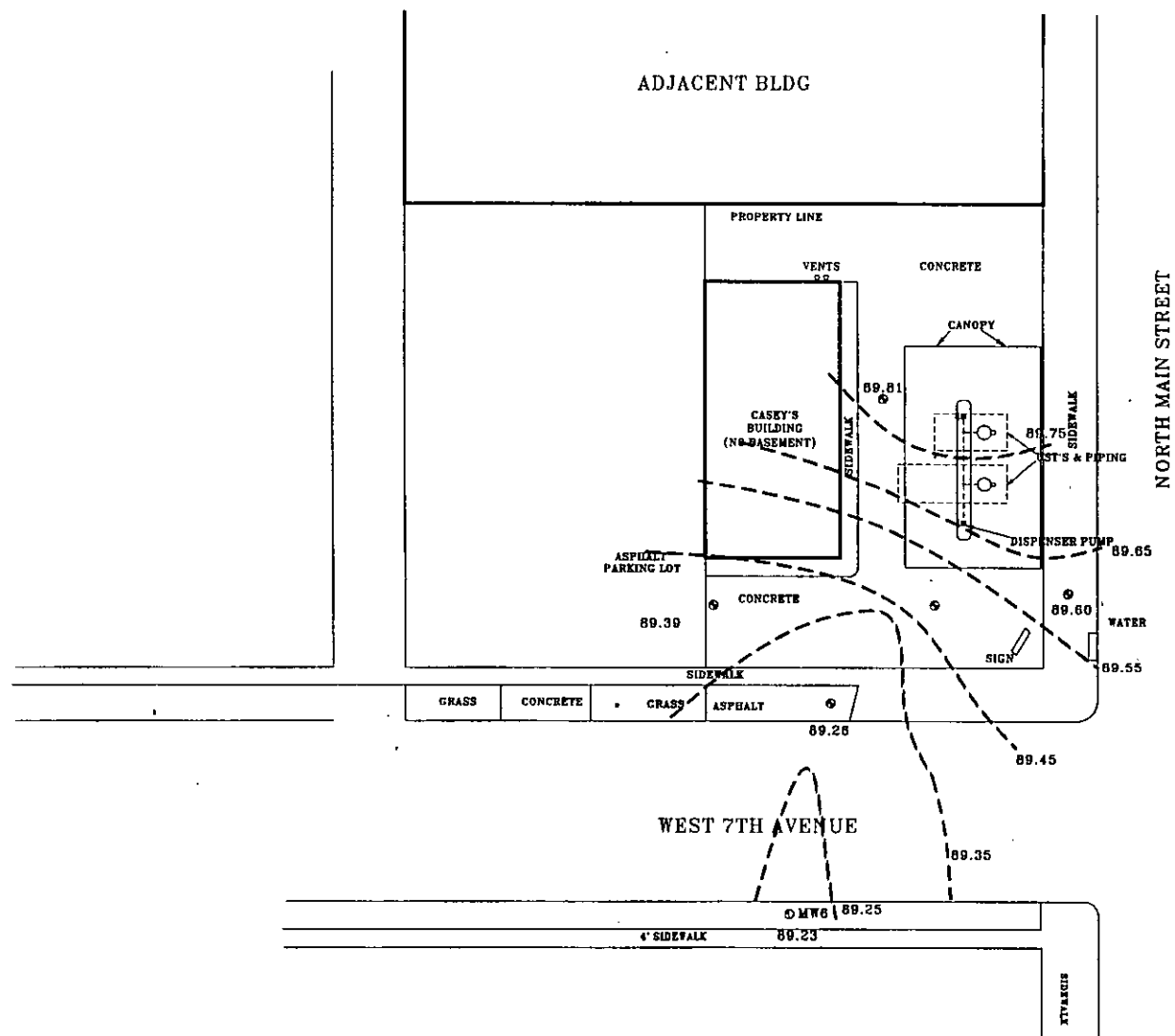
SDGWQS: South Dakota Groundwater Quality Standards (ARSD 74:03:15:03). Values in **bold** print exceed SDGWQS.

Recent laboratory report attached.

See Figure 1 for well locations.



SCALE: 1" = 40'



WATER LEVELS OF 6-13-07

FIGURE 1
ESTIMATED GROUNDWATER CONTOUR MAP
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD

PROJECT #: 02-A83

DRAWN BY: BWE

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.



GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 East 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY 20682

PROJECT:

Casey's General Store
701 N. Main Street
Mitchell, SD

DATE: June 15, 2007

SAMPLE MEDIUM: WATER

DATE SAMPLED: June 13, 2007

DATE RECEIVED: June 13, 2007

CLIENT:

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

Site	Lab ID#	Method	Compound Analyzed	Test Results	Units	Method Detection Limit
MW #6	1418-07					
	6/14/2007	EPA 602 (modified)	Benzene	<0.002	mg/L	0.002 mg/L
	6/14/2007	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	6/14/2007	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	6/14/2007	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	6/14/2007	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	6/14/2007	California USGS	TPH as Gasoline	0.326	mg/L	0.1 mg/L

Comments: Sample pH <2.

Temperature at Receipt: 13 C

Analysts: Katherine Howard and Jason Cook

Respectfully submitted

Katherine Howard, Laboratory Supervisor

Reviewed by:



GEOTEK ENGINEERING & TESTING SERVICES. INC.

909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773

SN: 20682

CHAIN OF CUSTODY RECORD Analytical Request

LAB: Geotek

GEOTEK PROJECT NAME Casey's General Store Geotek Project # 02-A83-3 TRANSMITTAL OF RESULTS
Address 701 N. Main St Geotek Project Manager Terry Zatz Report To _____
Mitchell S. Dak P.O. #/Billing Reference _____ Fax? _____
Bill To Geotek Express Mail? _____
Standard Mail? _____

Sampled by (PRINT) Red Phone# _____

Sampler Signature [Signature] Date Sampled 6-13-07

Sampled by (PRINT) <u>Red</u> Phone# _____					Standard Mail? _____										
Sampler Signature <u>[Signature]</u> Date Sampled <u>6-13-07</u>					ANALYSIS REQUESTED										
Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY METHODS (State Regulatory Agency)										Remarks
					BTEX	TH as Gasoline	Naphthalene	TH as Fuel Oil/Diesel	TH as Waste Oil	Benzene Toluene	MTBE	n-Hexane	Speed of Analysis No. days if other than standard turnaround		
1418	mwb	H ₂ O	3000		X	X						X			slight

Relinquished by Sampler: (Signature) <u>[Signature]</u>	DATE/TIME <u>6-13-07</u>	Received by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME	Method of Shipment:
Delivered by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME	Received by Laboratory: (Signature) <u>[Signature]</u>	DATE/TIME <u>6/13/07 1:35p</u>	

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

(13)



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773

SB

January 5, 2007

Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-8045

Attn: Ms. Jill Reams-Widder

Subj: Groundwater Monitoring Event
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237
PRCF #6643



Dear Ms. Reams-Widder:

Introduction

This correspondence presents the results of the Groundwater Monitoring Event for the referenced project. We are transmitting one copy of our report. Additional copies are being sent as noted below.

Purpose and Scope

The scope of our work was limited to:

1. Mobilizing an environmental technician to the site on December 5, 2006.
2. Checking monitoring well MW5 for the presence and thickness of free phase petroleum product.
3. Measuring depth to groundwater in monitoring wells (MW1, & MW3-6).
4. Obtaining a groundwater sample from MW6 and submitting it to a chemistry laboratory for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline analysis.

5. Preparing a semi-annual report presenting our data, opinions, and recommendations.

Authorization

This work was authorized by Casey's General Stores, Inc. acceptance of our August 15, 2006 amendment to the October 1, 2002 contract (SD Petroleum Release Compensation Fund (PRCF) review letters of September 5, 2006 and October 1, 2002 respectively).

Water/Product Level Measurements

Depth to groundwater was measured in the monitoring wells on December 5, 2006. Depth to groundwater was approximately 9' to 10' below grade. The monitoring well water level data is presented in Table 1. A groundwater elevation map for the December 5, 2006 event is attached as Figure 1. The groundwater gradient appears to be to the south. This is consistent with previous measurement events.

Free phase product (0.07' thick) was measured in MW5 on December 5, 2006. The current and previous product measurements are summarized on Table 1. There has been one previous product occurrence in MW5, as detailed on Table 1. Over the six measurement events in 2003-2006, the water table has been fairly stable (0.91' difference between the high and low events). The water table elevation does not appear to be a significant factor in the product measurements to date.

Water Quality Sampling and Analysis

A groundwater sample was collected from monitoring well MW6 on December 5, 2006. The sample was submitted to a chemistry laboratory for hydrocarbon analysis. The sample was analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline. The water quality analytical data is provided on Table 2 and the recent laboratory report is attached. Groundwater from MW6 had 3.800 ppm TPH as gasoline. Benzene in groundwater from MW6 slightly exceeds the South Dakota groundwater quality standards.

Discussion

The August 9, 2006 DENR letter required semi-annual groundwater monitoring. This is the first event since then. The second semi-annual event is planned for June 2007.

Standard of Care

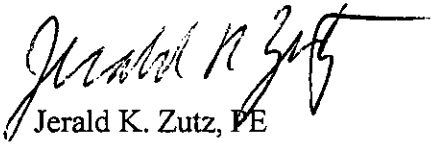
Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or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



Remarks

GeoTek Engineering & Testing Services, Inc. appreciates the opportunity to have been of service on this project. Please contact us if you have questions concerning this report or project.

GeoTek Engineering & Testing Services, Inc.



Jerald K. Zutz, PE
Project Engineer
CPRR #R060

cc: DENR, Pierre, Mr. Doug Miller
DENR, Sioux Falls, Mr. Scott Bickler
PRCF, Pierre, Mr. John McVey
PRCF, Sioux Falls, Mr. Larry Headrick



TABLE 1
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW1	98.52	4-30-03	--	9.30	--	89.22
		7-28-03	--	9.12	--	89.40
		11-20-03	--	9.42	--	89.10
		2-12-04	--	9.87	--	88.65
		11-7-05	--	9.65	--	88.87
		6-26-06	--	9.26	--	89.26
		12-18-06	--	9.61	--	88.91
MW2	97.66	4-30-03	8.68	9.31	0.63	88.35
		7-28-03	8.42	9.08	0.66	89.24
		11-20-03	8.80	9.08	0.28	88.86 *
		2-12-04	9.25	9.73	0.48	88.41 *
		11-7-05	9.10	9.47	0.37	88.56
MW3	97.28	7-28-03	--	8.32	--	88.96
		11-20-03	--	8.60	--	88.68
		2-12-04	--	8.93	--	88.35
		11-7-05	--	8.77	--	88.51
		6-26-06	--	8.41	--	88.87
		12-18-06	--	8.72	--	88.56

Table Continued

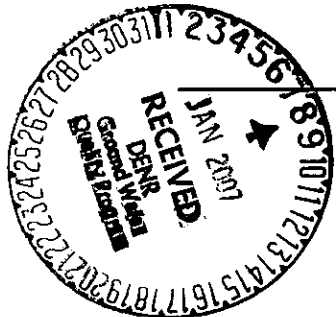


TABLE 1 CONTINUED
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW4	98.31	7-28-03	--	9.32	--	88.99
		11-20-03	--	9.91	--	88.40
		2-12-04	--	10.48	--	87.83
		11-7-05	--	9.99	--	88.32
		6-26-06	--	9.42	--	88.89
		12-18-06	--	9.86	--	88.45
MW5	97.12	7-28-03	--	8.36	--	88.76
		11-20-03	--	8.83	--	88.29
		2-12-04	--	9.27	--	87.85
		11-7-05	8.79	9.14	0.35	88.33
		6-26-06	--	8.43	--	88.69
		12-18-06	8.81	8.88	0.07	88.31
MW6	97.00	6-26-06	--	8.34	--	88.66
		12-18-06	--	8.91	--	88.09

Notes:

Top of riser elevations referenced the floor of the building (arbitrary datum).

See Figure 1 for well locations and estimated groundwater contour map.

* = trace of product bailed; new absorbent sock installed.



TABLE 2
GROUNDWATER SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Well Number	Date	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	TPH as Gasoline
MW1	4-30-03	0.010	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	0.534	<0.002	<0.002	<0.005	<0.002	0.830
	2-12-04	0.071	<0.002	<0.002	<0.005	<0.002	<0.100
MW3	7-28-03	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	2-12-04	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
MW4	7-28-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	2-12-04	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
MW5	7-28-03	3.70	7.57	0.20	2.89	<0.02	33.00
	11-20-03	5.04	4.39	1.01	2.58	<0.02	23.70
	2-12-04	3.700	4.080	0.820	0.320	0.042	20.500
MW6	6-26-06	0.009	0.013	0.004	<0.005	<0.002	5.670
	12-18-06	0.010	<0.002	0.003	0.005	<0.002	3.800
SDGWQS		0.005	1	0.7	10		10

Notes: All values in parts per million (ppm).

SDGWQS: South Dakota Groundwater Quality Standards (ARSD 74:03:15:03).

Values in **bold** print exceed SDGWQS.

Recent laboratory report attached.

See Figure 1 for well locations.

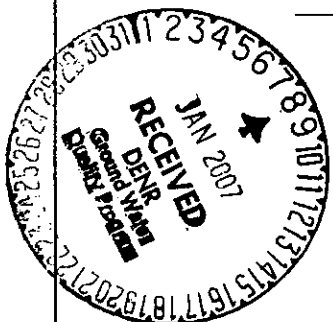
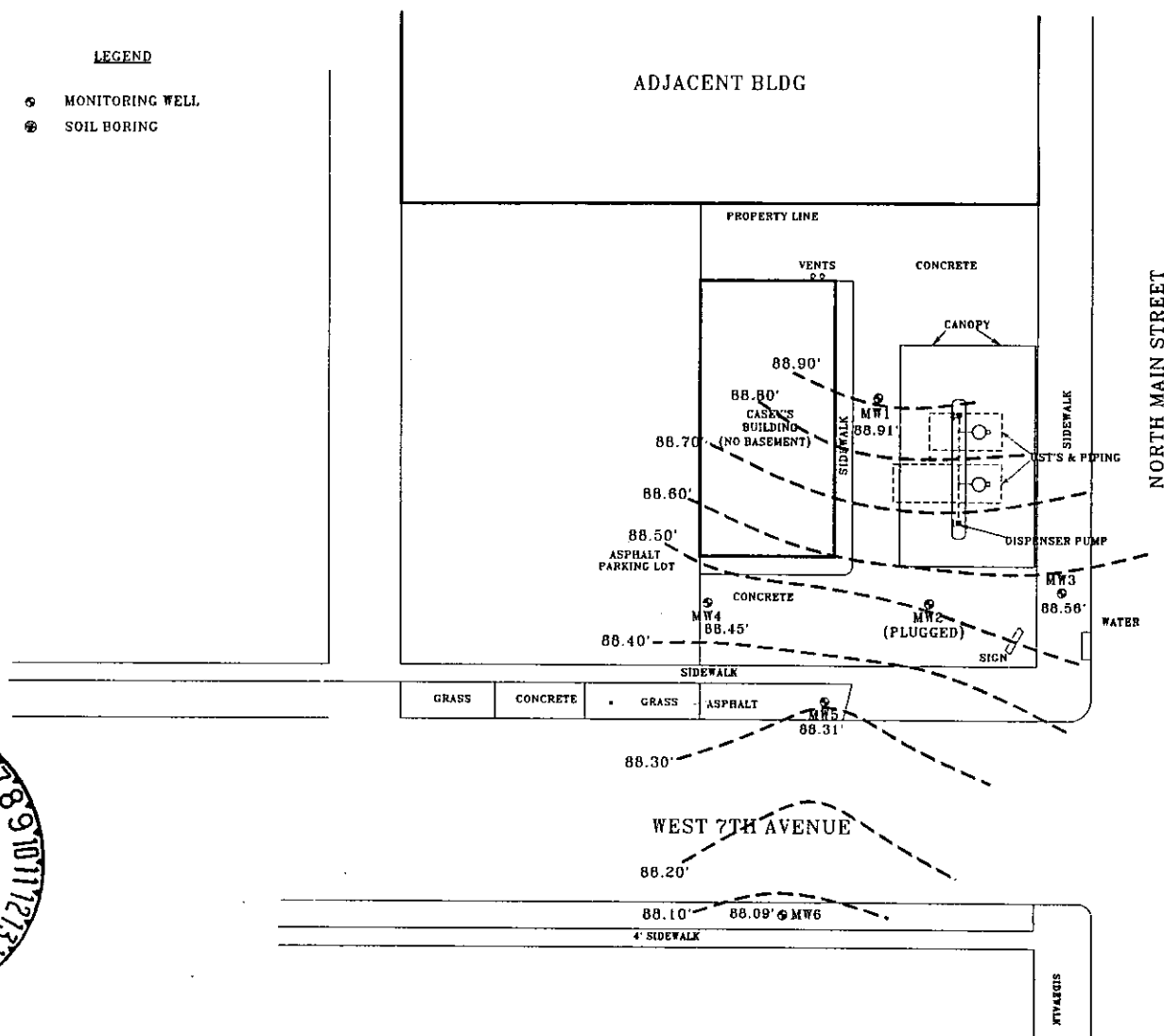


LEGEND

- ⊙ MONITORING WELL
- ⊗ SOIL BORING



SCALE: 1" = 40'



WATER LEVELS OF 12-5-06

FIGURE 1
ESTIMATED GROUNDWATER CONTOUR MAP
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD

PROJECT #: 02-A83

DRAWN BY: BWE

CHECKED BY:

**GEOTEK ENGINEERING &
TESTING SERVICES, INC.**



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

909 East 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

REPORT OF ANALYTICAL RESULTS

PROJECT # : 02-A83-3

CHAIN OF CUSTODY 20423

PROJECT:

Casey's General Store
701 N. Main Street
Mitchell, SD

DATE: December 07, 2006

SAMPLE MEDIUM: WATER

DATE SAMPLED: December 05, 2006

DATE RECEIVED: December 05, 2006

CLIENT:

Casey's General Stores, Inc.
P.O. Box 3001
Ankeny, IA 50021

PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW #6	2507-06					
	12/6/2006	EPA 602 (modified)	Benzene	0.010	mg/L	0.002 mg/L
	12/6/2006	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	12/6/2006	EPA 602 (modified)	Ethylbenzene	0.003	mg/L	0.002 mg/L
	12/6/2006	EPA 602 (modified)	Xylenes	0.005	mg/L	0.005 mg/L
	12/6/2006	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	12/6/2006	California USGS	TPH as Gasoline	3.800	mg/L	0.1 mg/L

Temperature at Receipt: 11 C

Analysts: Katherine Howard and Jason Cook

Respectfully submitted

Katherine Howard, Laboratory Supervisor

Reviewed by:

JK 12-7-06



Telephone (605) 335-5512 • Fax (605) 335-0773

LAB: Geotek

TRANSMITTAL OF RESULTS



Report To _____

Fax? _____

Express Mail? _____

Standard Mail?

Sampler Signature [Signature] Date Sampled 12-5-06

Relinquished by Sampler: (Signature) 	DATE/TIME 12-5-06	Received by Shipper: (Signature)	DATE/TIME	Method of Shipment:
Delivered by Shipper: (Signature)	DATE/TIME	Received by Laboratory: (Signature) 	DATE/TIME 12/5/06 15:30	

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____



2002.237
**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

DENR – Sioux Falls Office
4305 S Louise Ave
Sioux Falls, SD 57106

August 9, 2006

GLENN NORGART
CASEYS GENERAL STORES, INC
PO BOX 3001
ANKENY, IA 50021-0030

RE: Casey's General Stores Inc., 701 North Main Street, Mitchell, SD
DENR File # 2002.237

Dear Mr. Norgart:

The Department of Environment and Natural Resources (DENR) has completed its review of Geotek Engineering's report 'Well Installation and Groundwater Monitoring' dated July 5, 2006. As a result of this review, DENR has the following comments and concerns.

Excavation of the impacted soils took place in November 2005. The first monitoring event since the excavation was in June 2006. Given that this event did not detect free phase product, the active remediation appears to have been successful in eliminating the product. However, because the excavation did not take place when originally planned, ground water contamination has spread.

To confirm that free product will not reoccur and that the plume of contamination is stable, DENR is requiring that semi-annual monitoring be conducted. This is to consist of checking MW-5 for free phase product and testing the new down gradient well (MW-6) for gasoline contaminants. Should free phase product not be detected and the plume remain stable, this site may be considered for 'No Further Action'.

Thank you for your cooperation in this matter. If you have any further question regarding this letter, please contact me at (605) 362-3500.

Sincerely,

Scott J. Bickler

C: Doug Miller, DENR
Dennis Rounds, PRCF
Jerald K. Zutz, Geotek Engineering



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773

SB
2002.237

July 5, 2006



Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-8045

Attn: Ms. Jill Reams-Widder

Subj: Well Installation and Groundwater Monitoring Event
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237
PRCF #6643

Dear Ms. Reams-Widder:

INTRODUCTION

This correspondence presents the results of the Well Installation and Groundwater Monitoring Event for the referenced project. We are transmitting one copy of our report. Additional copies are being sent as noted below.

Background Information

The site consists of a convenience store, a dispenser island, and two gasoline USTs (1-6000 gallon, and 1-10,000 gallon). The old dispensers and piping were removed, and new piping, dispensers, and a canopy installed in October 2002. A soil sample collected at the time had petroleum concentrations above the SD DENR Tier 1 Action Levels. A Tier 2 assessment was conducted. Several soil borings were advanced, with five completed as groundwater monitoring wells. Free phase product was measured in MW2 on each of five events in 2003-2005, and in MW5 on one event in 2005.

Excavation of saturated petroleum impacted soils was conducted on November 7, 2005. Approximately 420 in-place cubic yards of soil was removed from the south edge of the property. The excavation did not remove all petroleum contaminated soils. Petroleum saturated soils around MW5 were left in place.

The February 15, 2006 DENR letter required installation of one down gradient well to determine subsurface conditions, and also that MW4 and MW5 be checked for the presence of free phase product in June 2006.

Purpose and Scope

The scope of our work was limited to:

1. Mobilizing a drill rig, crew and environmental technician to the site.
2. Advancing one soil boring, and completing it as a groundwater monitoring well (MW6).
3. Collecting soil samples from soil boring MW6, and scanning the samples in the field with a photoionization detector (PID) for total organic vapors.
4. Obtaining and submitting one soil sample from soil boring MW6 to a chemistry laboratory for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline analysis.
5. Checking monitoring wells for the presence and thickness of free phase petroleum product in June 2006.
6. Measuring depth to groundwater in the monitoring wells at the groundwater sampling event in June 2006.
7. Obtaining one groundwater sample from monitoring well MW6 and submitting it to a chemistry laboratory for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline analysis in June 2006.
8. Preparing a report presenting our data, opinions, and recommendations.

Authorization

This work was authorized by Casey's acceptance of our February 22, 2006 amendment to the October 1, 2002 contract (SD Petroleum Release Compensation Fund (PRCF) review letters of March 7, 2006 and October 1, 2002 respectively).

PROJECT RESULTS

Soil Boring and Sampling

One soil boring (MW6) was advanced on May 12, 2006. The boring location is illustrated on Figure 1. Split barrel sampling was performed at 2-1/2' intervals in the boring. The subsurface conditions encountered in the soil boring are illustrated on the attached boring log. A review of the log indicates a subsurface profile generally consisting of about 4.5' of fill, then sand and silty sand to about 12', and then clay.

Soil Sample Scanning

Samples recovered from the boring MW6 were scanned with a photoionization detector (PID) for organic vapors as an indication of petroleum contamination. The soil sample PID readings are located on the attached boring log opposite the samples upon which the readings were taken. Elevated organic vapors (>1.0 ppm) were detected from 9-1/2' to 14-1/2' deep.

Soil Sample Laboratory Analysis

The soil sample from boring MW6 with the highest PID reading was collected and submitted to a chemistry laboratory for analysis. The samples were analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and Total Petroleum Hydrocarbons (TPH) as gasoline. The laboratory report is attached. TPH as gasoline concentrations were detected in the soil sample from MW6 at 2798 ppm. The petroleum concentration in soil from MW6 exceeds the SD Tier 1 action levels. The TPH concentration in MW6 was the most measured in soil at this site, except for a soil sample taken by the south dispenser pump in 2002 (#1-3', 4075 ppm).

Well Installation

One groundwater monitoring well (MW6) was installed at the location illustrated on Figure 1. Construction details for the well are illustrated on the attached boring/well log sheet. The well was developed (by hand bailing methods) on June 26, 2006.

Water/Product Level Measurements

Depth to groundwater was measured in the monitoring wells on June 26, 2006. Depth to groundwater was approximately 9' below grade. The monitoring well water level data is presented in Table 1. A groundwater elevation map for the June 26, 2006 event is attached as Figure 1. The groundwater gradient appears to be to the south.

Free phase product was not measured in the monitoring wells on June 26, 2006. The previous product measurements are summarized on Table 1.

Water Quality Sampling and Analysis

A groundwater sample was collected from monitoring well MW6 on June 26, 2006. The sample was submitted to a chemistry laboratory for hydrocarbon analysis. The sample was analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline. The water quality analytical data is provided on Table 2 and the recent laboratory report is attached. Groundwater from MW6 had 5.670 ppm TPH as gasoline. Benzene in groundwater from MW6 slightly exceeds the South Dakota groundwater quality standards.

DISCUSSION

As shown in cross section A-A' (Figure 3), there appears to be an increasing thickness of sandy soils above the glacial till when going from north to south. Figure 2 is a plan view of cross section A-A'. In the MW5 and MW6 area, some petroleum concentrations are within the more permeable sandy soils. The thickness of saturated sandy soils above the glacial till to the southeast and southwest of MW5 may affect potential migration of petroleum concentrations. Therefore, consideration should be given to better defining the down-gradient extent of petroleum concentrations in soil and groundwater.

The extent of petroleum concentrations in groundwater is nearly defined at MW6. Consideration should be given to collecting one or more additional groundwater samples from MW6 to verify a stable or declining trend.

Excavation in 2005 did not remove all petroleum saturated soils. Free product was observed in MW5 on one event in 2005, but not on the recent monitoring event. The removal of petroleum saturated soils in the immediate up gradient area should be beneficial in reducing the product thickness and/or occurrence in MW5. Nevertheless, there is some potential for product to reoccur. Consideration should be given to periodic checks to see if product reoccurs.

While the off-site land south of the site is currently mostly vacant (small city park), consideration could be given to remediating remaining petroleum concentrations to be protective of future land use. Although the sandy soils above the glacial till are fairly thin, it may be feasible to apply soil vapor extract and air sparging to reduce petroleum concentrations in the area.

RECOMMENDATIONS

We recommend additional soil borings and monitoring wells to better define the extent of petroleum concentrations to the southeast and southwest of MW5.

We also recommend additional groundwater monitoring (perhaps two semi-annual events) be conducted to check the petroleum concentrations in MW6, and check for potential product in other monitoring wells. Product reoccurrence would indicate further remediation is necessary.

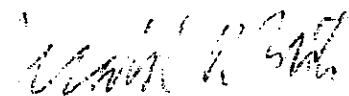
STANDARD OF CARE

Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and 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.

REMARKS

GeoTek Engineering & Testing Services, Inc. appreciates the opportunity to have been of service on this project. Please contact us if you have questions concerning this report or project.

GeoTek Engineering & Testing Services, Inc.



Jerald K. Zutz, PE
Project Engineer
CPRR #R060

cc: DENR, Pierre, Mr. Doug Miller
DENR, Sioux Falls, Mr. Scott Bickler
PRCF, Pierre, Mr. John McVey
PRCF, Sioux Falls, Mr. Larry Headrick

TABLE 1
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW1	98.52	4-30-03	--	9.30	--	89.22
		7-28-03	--	9.12	--	89.40
		11-20-03	--	9.42	--	89.10
		2-12-04	--	9.87	--	88.65
		11-7-05	--	9.65	--	88.87
		6-26-06	--	9.26	--	89.26
MW2	97.66	4-30-03	8.68	9.31	0.63	88.35
		7-28-03	8.42	9.08	0.66	89.24
		11-20-03	8.80	9.08	0.28	88.86 *
		2-12-04	9.25	9.73	0.48	88.41 *
		11-7-05	9.10	9.47	0.37	88.56
MW3	97.28	7-28-03	--	8.32	--	88.96
		11-20-03	--	8.60	--	88.68
		2-12-04	--	8.93	--	88.35
		11-7-05	--	8.77	--	88.51
		6-26-06	--	8.41	--	88.87

Table Continued

**TABLE 1 CONTINUED
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83**

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW4	98.31	7-28-03	--	9.32	--	88.99
		11-20-03	--	9.91	--	88.40
		2-12-04	--	10.48	--	87.83
		11-7-05	--	9.99	--	88.32
		6-26-06	--	9.42	--	88.89
MW5	97.12	7-28-03	--	8.36	--	88.76
		11-20-03	--	8.83	--	88.29
		2-12-04	--	9.27	--	87.85
		11-7-05	8.79	9.14	0.35	88.33
		6-26-06	--	8.43	--	88.69
MW6	97.00	6-26-06	--	8.34	--	88.66

Notes:

Top of riser elevations referenced the floor of the building (arbitrary datum).

See Figure 1 for well locations and estimated groundwater contour map.

* = trace of product bailed; new absorbent sock installed.

TABLE 2
GROUNDWATER SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Well Number	Date	Benzene	Toluene	Ethyl- Benzene	Xylenes	MTBE	TPH as Gasoline
MW1	4-30-03	0.010	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	0.534	<0.002	<0.002	<0.005	<0.002	0.830
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	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	2-12-04	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
MW4	7-28-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	2-12-04	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
MW5	7-28-03	3.70	7.57	0.20	2.89	<0.02	33.00
	11-20-03	5.04	4.39	1.01	2.58	<0.02	23.70
	2-12-04	3.700	4.080	0.820	0.320	0.042	20.500
MW6	6-26-06	0.009	0.013	0.004	<0.005	<0.002	5.670
SDGWQS		0.005	1	0.7	10		10

Notes: All values in parts per million (ppm).

SDGWQS: South Dakota Groundwater Quality Standards (ARSD 74:03:15:03).

Values in **bold** print exceed SDGWQS.

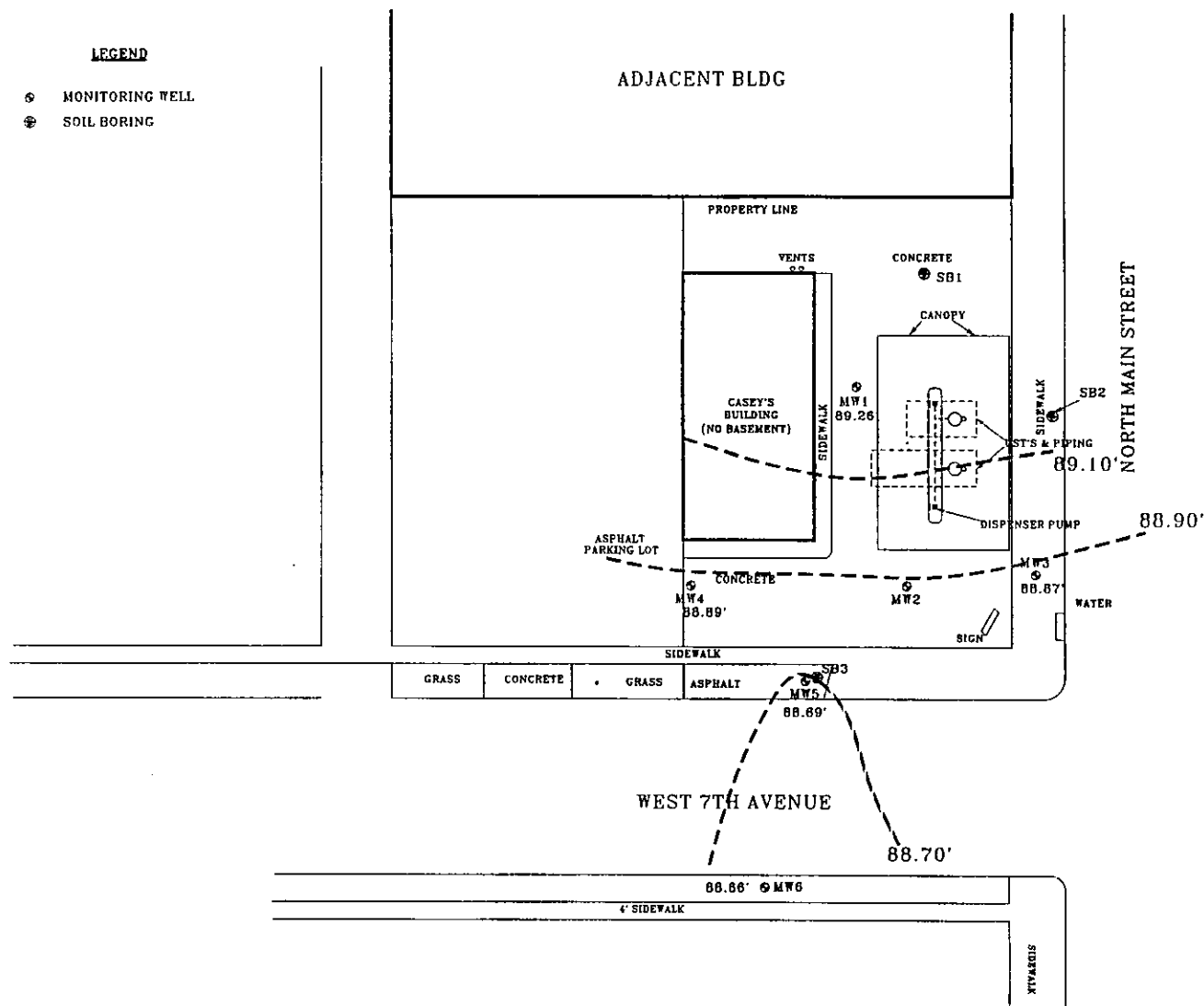
Recent laboratory report attached.

See Figure 1 for well locations.

- LEGEND**
- ⊙ MONITORING WELL
 - ⊕ SOIL BORING



SCALE: 1" = 40'



WATERLEVELS OF 6-26-06

FIGURE 1
ESTIMATED GROUNDWATER CONTOUR MAP
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD

PERRY/02-A83

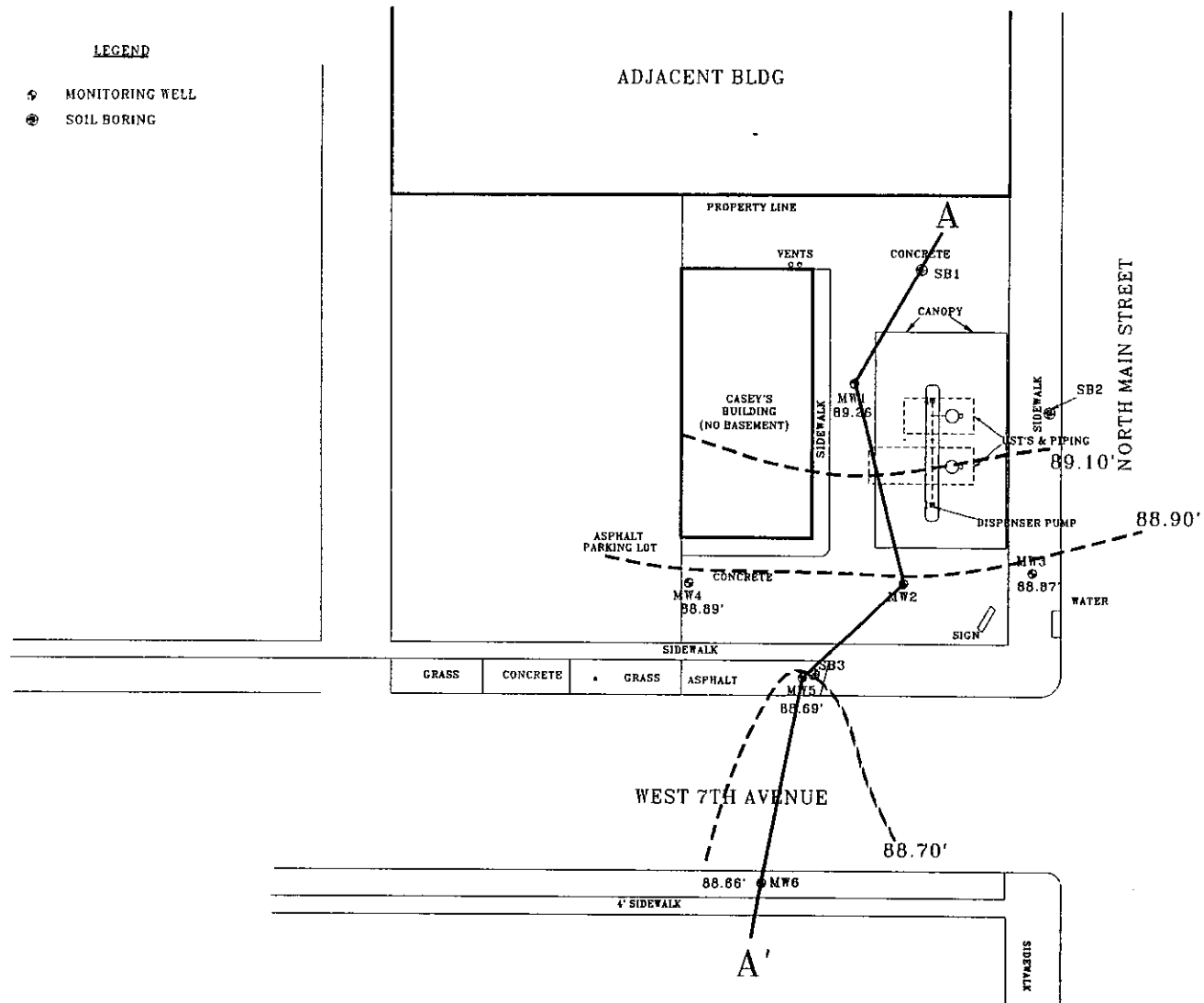
PROJECT #: 02-A83

DRAWN BY: BWE

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

- LEGEND**
- ⊕ MONITORING WELL
 - ⊙ SOIL BORING



WATERLEVELS OF 6-26-06

FIGURE 2
PLAN VIEW OF CROSS-SECTION A-A'
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD

TERRY/DE-JOY

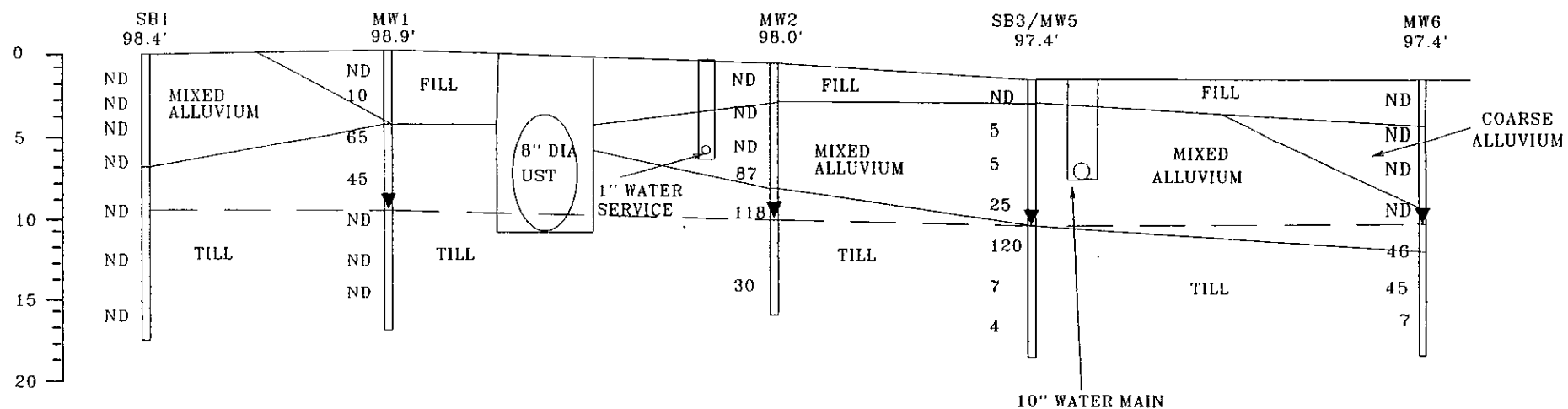
PROJECT #: 02-A83

DRAWN BY: BWE

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

CROSS SECTION A - A'



HORIZONTAL SCALE 1" = 20'
 WATER LEVELS OF 06/26/06
 PID READINGS ON SIDE OF BORINGS

FIGURE 3
 CROSS SECTION A-A'
 CASEY'S GENERAL STORES INC.
 701 N. MAIN ST.
 MITCHELL, SD

PROJECT #: 02-A83

DRAWN BY: BWE

CHECKED BY: *[Signature]*

GEOTEK ENGINEERING &
 TESTING SERVICES, INC.



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 E. 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

ENVIRONMENTAL SOIL BORING LOG / WELL CONSTRUCTION INFORMATION

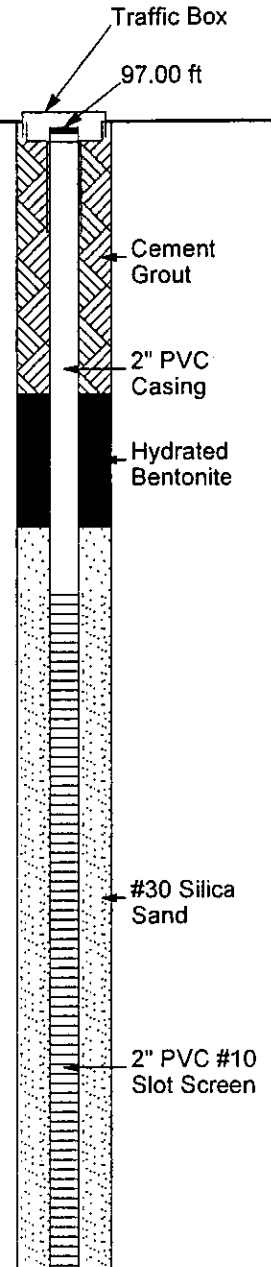
GEOTEK # 02-A83

BORING / WELL NO. MW6 (1 of 1)

PROJECT Casey's General Store, 701 N Main St, Mitchell, SD

Well Construction Details

DEPTH in FEET	DESCRIPTION OF MATERIAL ↓ SURFACE ELEVATION <u>97.4 ft</u>	GEOLOGIC ORIGIN	PID / FID	WL	SAMPLE	
					NO.	TYPE
	<u>FILL, MOSTLY CLAY:</u> brown, moist	FILL	ND		1	HSA
			ND		2	SS
4½	<u>SAND:</u> medium grained, brown, moist, (SP)	COARSE ALLUVIUM	ND		3	SS
			ND		4	SS
9½	<u>SILTY SAND:</u> fine grained, gray, waterbearing, (SM)	MIXED ALLUVIUM	46		5	SS
12	<u>LEAN CLAY TO FAT CLAY WITH SAND:</u> a little gravel, dark brown, moist, (CL)	TILL	45		6	SS
14½	<u>LEAN CLAY TO FAT CLAY WITH SAND:</u> a little gravel, dark gray, moist, (CL)	TILL	ND		7	SS
17	Bottom of borehole at 17 feet.					



WATER LEVEL MEASUREMENTS

START 5-12-06

COMPLETE 5-12-06

DATE	TIME	DEPTH BELOW		WATER ELEVATION	METHOD
		SURFACE	TOR / TOC		
6-26-06	4:45 pm	8.7	8.34	88.66	3.25" I.D. HS
--	--	--	--	--	
--	--	--	--	--	
--	--	--	--	--	CREW CHIEF HANSON

ENVIRONMENTAL WELL LOG 02-A83.GPJ GEOTEKENG.GDT 6/27/06



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

909 East 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

REPORT OF ANALYTICAL RESULTS

PROJECT # : 02-A83-3

CHAIN OF CUSTODY 19992

PROJECT:

Casey's General Store
701 N. Main Street
Mitchell, SD

DATE: May 17, 2006

SAMPLE MEDIUM: SOIL

DATE SAMPLED: May 12, 2006

DATE RECEIVED: May 12, 2006

CLIENT:

Casey's General Stores, Inc.
P.O. Box 3001
Ankeny, IA 50021

PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW-6 9.5-12'	1419-06					
	5/16/2006	EPA 8020	Benzene	1.27	mg/kg	0.2 mg/kg
	5/16/2006	EPA 8020	Toluene	0.70	mg/kg	0.2 mg/kg
	5/16/2006	EPA 8020	Ethylbenzene	5.58	mg/kg	0.2 mg/kg
	5/16/2006	EPA 8020	Xylenes	1.10	mg/kg	0.2 mg/kg
	5/16/2006	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	5/16/2006	California USGS	TPH as Gasoline	2798.00	mg/kg	10 mg/kg

Analysts: Katherine Howard and Jason Cook

Respectfully submitted

Katherine Howard, Laboratory Supervisor

909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773

SN: 19992

CHAIN OF CUSTODY RECORD

Analytical Request

LAB: Geo Tech

GEOTEK PROJECT NAME Cass's General Store

Geotek Project # 02-A833

TRANSMITTAL OF RESULTS

Address 701 N. Main St

Geotek Project Manager JAZ

Report To _____

Mitchell, S D

P.O. #/Billing Reference

Fax?

Bill To

Express Mail? _____

Standard Mail?

Sampled by (PRINT) JERRY ZUTZ Phone#

Sampler Signature C. J. Smith Date Sampled 5-12-06

ANALYSIS REQUESTED[illegible]

Relinquished by Sampler: (Signature)

DATE/TIME

Received by Shipper: (Signature)

DATE/TIME

Method of Shipment:

Delivered by Shipper: (Signature)

DATE/TIME

Received by Laboratory: (Signature)

DATE/TIME

Hand Carry

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____



GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 East 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

REPORT OF ANALYTICAL RESULTS

PROJECT # : 02-A83-3

CHAIN OF CUSTODY 20077

PROJECT:

Casey's General Store
701 N. Main Street
Mitchell, SD

DATE: June 28, 2006

SAMPLE MEDIUM: WATER

DATE SAMPLED: June 26, 2006

DATE RECEIVED: June 27, 2006

CLIENT:

Casey's General Stores, Inc.
P.O. Box 3001
Ankeny, IA 50021

PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW #6	1689-06					
	6/28/2006	EPA 602 (modified)	Benzene	0.009	mg/L	0.002 mg/L
	6/28/2006	EPA 602 (modified)	Toluene	0.013	mg/L	0.002 mg/L
	6/28/2006	EPA 602 (modified)	Ethylbenzene	0.004	mg/L	0.002 mg/L
	6/28/2006	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	6/28/2006	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	6/28/2006	California USGS	TPH as Gasoline	5.670	mg/L	0.1 mg/L

Temperature at Receipt: 8 C

Analysts: Katherine Howard and Jason Cook

Respectfully submitted

Katherine Howard, Laboratory Supervisor



GEOTEK ENGINEERING & TESTING SERVICES, INC.

909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773

SN: 20077

CHAIN OF CUSTODY RECORD

Analytical Request

LAB: Geotek

GEOTEK PROJECT NAME Carey's General Store

Geotek Project # 02-A83

TRANSMITTAL OF RESULTS

Address 701 N. Main

Geotek Project Manager Jerry Zintz

Report To _____

Mitchell S. Dahl

P.O. #/Billing Reference _____

Fax? _____

Bill To Geotek

Express Mail? _____

Standard Mail? _____

Sampled by (PRINT) Red

Phone# _____

Sampler Signature [Signature]

Date Sampled 6-26-06

ANALYSIS REQUESTED

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY (State Agency)	BTEX	TH as	Naphthalene	TH as Fuel Oil	TH as Waste	Benzene Toluene	MTBE	n-Hexane	Speed of No. days standard	Remarks
1087	mur 6	H ₂ O	300			X	X					X			Strong

Relinquished by Sampler: (Signature) [Signature]

DATE/TIME

6-26-06

Received by Shipper: (Signature) [Signature]

DATE/TIME

Method of Shipment: _____

Delivered by Shipper: (Signature) [Signature]

DATE/TIME

Received by Laboratory: (Signature) [Signature]

DATE/TIME

6/26/06 7:30

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

SITE SUMMARY

Date: July 5, 2006

Department File No. 2002.237

Site Name: Casey's General Store

Responsible Party: Casey's General Stores, Inc.

Location (address): 701 N. Main Street

City: Mitchell, South Dakota

Latitude/Longitude: 43°42'57"N / 98°01'33"W

Consultant: GeoTek Engineering & Testing Services, Inc.

Source: Dispensers, piping, fills, overfills

Current Site Classification: 4

Circle All That Apply:

Land Use: Residential, Industrial, Rural, Other: Commercial

Type of Corrective Action: Excavation, Soil Vapor Extraction, Air Sparging, Bio-Venting, Monitoring, Engineering Control (specify type), Additional Information:

Utilities Investigated: Water, Sewer, Telephone, CATV, Storm Water, Other:

Environmental Media Impacted: Surface Soil <3' below ground surface, Subsurface Soil >3' below ground surface, Groundwater, Surface Water, Indoor Air, Utilities, Outdoor Air, Other:

Cubic Yards of Soil Excavated/treated: 70 in-place cubic yards (2002); 420 in-place cubic yards (2005)

Name of Landfill/Landfarm: Soiltec LLC, Mitchell, SD (2002); City of Mitchell Landfill, Mitchell, SD (2005)

Distance to and Name of Closest Surface Water: approximately 1/2 mile southwest to Dry Creek

Depth/Distance to and Name of Closest Aquifer: approximately 60' deep to Cretaceous Niobrara Aquifer

Was Free Product Present? Yes, in MW2 and MW5

Number of Monitoring Wells Installed: 6

Number of Monitoring Wells Properly Closed: 1

Wellfield or Wellhead Protection Area: No

Off Site Migration of Contamination (Yes/No) and Direction: south

Sensitive Receptors Within 500 feet of Plume: Yes

Proposed Action: Closure/Inactive, Tier 2 Assessment, Tier 3 Assessment, Remediation, Eliminate Exposure Route (specify):

Signature of Responsible Party

For Department Use:

Reviewer:



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr



DENR – Sioux Falls Office
4305 S Louise Ave
Sioux Falls, SD 57106

February 15, 2006

GLENN NORGART
CASEYS GENERAL STORES, INC
PO BOX 3001
ANKENY, IA 50021-0030

RE: Casey's General Stores Inc., 701 North Main Street, Mitchell, SD
SDDENR File # 2002.237

Dear Mr. Norgart:

The Department of Environment and Natural Resources (DENR) has completed its review of Geotek Engineering's report 'Excavation Observations' dated December 6, 2005. As a result of this review, DENR has the following comments and concerns.

The purpose of the excavation was to remove saturated petroleum impacted soils to prevent migration of contaminants and to eliminate risk to human health and the environment. The actual excavation did indeed accomplish much of this task. The remaining impacted soils along the south wall could not be removed due to subsurface utilities. Within the area of the remaining impacted soils is monitoring well 5 (MW-5) which has detected free phase product.

To confirm the excavation eliminated risks, DENR is requiring that the down gradient and side gradient monitoring wells, MW-5 and MW-4 respectively, be checked for the presence of free phase product in June 2006. Additionally, the department is requiring a new down gradient well to determine subsurface conditions.

Thank you for your cooperation in this matter. If you have any further question regarding this letter, please contact me at (605) 362-3500.

Sincerely,

Scott J. Bickler

C: Doug Miller, DENR
Dennis Rounds, PRCF
Jerald K. Zutz, Geotek Engineering



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773

2002.237
COP, SB



December 6, 2005

Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-8045

Attn: Ms. Jill Reams-Widder

Subj: Excavation Observations
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237
PRCF #6643

Dear Ms. Reams-Widder:

INTRODUCTION

This correspondence presents the results of the excavation observations for the referenced project. We are transmitting one copy of our report. Additional copies are being sent as noted below.

Background Information

The site consists of a convenience store, a dispenser island, and two gasoline USTs (1-6000 gallon, and 1-10,000 gallon). The old dispensers and piping were removed, and new piping, dispensers, and a canopy installed in October 2002. A soil sample collected at the time had petroleum concentrations above the SD Department of Environment and Natural Resources (DENR) Tier 1 Action Levels. A Tier 2 assessment was conducted. Several soil borings were advanced, with five completed as groundwater monitoring wells. Free phase product has been measured in MW2 on each of four events in 2003-04.

The April 21, 2004 DENR letter required excavation of petroleum contaminated soil in an area south of the site's canopy, as well as replacement of a nearby city water main. The City of Mitchell public works director was able to determine the composition of the water main as iron, and therefore, DENR did not require replacement of the water main.

The November 2, 2005 DENR letter required a groundwater monitoring event be conducted prior to excavation. DENR correspondence of November 3, 2005 amended the requirement to include water levels and free product check of all wells, and collection of a groundwater sample from MW5.

Purpose and Scope

The scope of our work was limited to:

1. Mobilizing environmental personnel to the site to document conditions during excavation activities.
2. Measuring depth to free phase petroleum product or groundwater in the monitoring wells prior to excavation. If product is present, measuring product thickness.
3. Obtaining groundwater samples from MW5 and submitting to a chemistry laboratory for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline analysis. A sample will not be collected if free product is present in the well.
4. Collecting soil samples from the excavation and scanning the samples in the field with a photoionization detector (PID) for organic vapors as an indication of petroleum contamination.
5. Submitting up to one soil sample per sidewall and up to two soil samples from the excavation bottom to a chemistry laboratory for petroleum analysis.
6. Preparing a factual report presenting the results of the field and laboratory data, along with our opinions and recommendations.

Authorization

This excavation work was authorized by Casey's acceptance of our June 21, 2004 amendment to the October 1, 2002 contract. The SD Petroleum Release Compensation Fund (PRCF) letter of August 9, 2004 approved the excavation work amendment. The groundwater monitoring work was detailed in a November 2, 2005 contract amendment. However, the November 2, 2005 PRCF letter did not approve the groundwater monitoring contract amendment. PRCF correspondence of November 3, 2005 stated they could "reimburse the costs to complete the work" while on-site for the excavation work.

PROJECT RESULTS

Water Level Measurements

Depth to groundwater was measured in monitoring wells MW1-5 on November 7, 2005. Depth to groundwater was approximately 9-10' below grade. The monitoring well water level data is presented in Table 1. A groundwater elevation map for the November 7, 2005 event is attached as Figure 1. The groundwater gradient appears to be to the south.

MW2 and MW5 had free phase product thicknesses of 0.37' and 0.35' respectively. This was the first time product was measured in MW5. The product measurements are summarized on Table 1.

Excavation Observations

Excavation was conducted on November 7, 2005. A GeoTek representative was on-site from approximately 7:45 AM to 5:00 PM. Excavation was conducted in the area of former USTs and MW2, which is south of the current USTs and dispensers. Due to the limited space at the site, segregation of soils or stockpiling on-site was not feasible.

The general soil profile was about 1' of dark brown topsoil or fill soil, light brown silty sand to about 7' deep, then brown and gray lean clay glacial till. There was up to about 5' of fill on the north and west edges of the excavation.

Because of the apparent remaining petroleum concentrations along the south wall of the excavation, on-site DENR representative Mr. Scott Bickler and PRCF representative Mr. Larry Headrick desired to excavate below the south sidewalk (adjacent to MW5). With verbal approval of the City of Mitchell (Mr. Ralph Winters), about 36' of sidewalk was removed, and excavation was conducted below the sidewalk. Because of the product in MW5, excavation in that area was also desired to remove product saturated soils. However, a shallow underground electric line (for street lights) was present on the south edge of the sidewalk, and excavation in that area was not considered feasible.

Contaminated soils had a moderate to strong odor of petroleum. Slight groundwater was observed in the excavation. Water did not have a noticeable sheen. Three utilities were encountered in the excavation. The electrical conduit to a sign was along the east edge of the excavation at about 1' deep. There was an abandoned electric conduit that ran from east to west. And, there was a 4" diameter clay tile sewer line at about 4-5' deep running from the east to the west. The utility backfill trenches appeared to have native soils for fill. The utility lines and trenches did not appear to be a route for migration of contaminants (the contamination was deeper than the utilities). The PVC well pipe of MW2 was removed during the excavation process.

Soil Sample Scanning and Analysis

Soil samples were collected from the sidewalls and bottom of the excavation. The soil samples were scanned with a photoionization detector (PID) for total organic vapors as an indication of petroleum concentrations. The PID data is provided on Table 2. A sketch of the excavation area is provided on Figure 2, and the soil sample locations are shown on Figure 3.

Samples were collected at approximately 6', 9' and 11-12' below grade on the excavation sidewalls, and at about 11-12' deep on the excavation floor. A review of the PID data indicates that elevated petroleum vapors (>1.0 parts per million or ppm PID units) were detected in most locations below 6'. Significantly elevated petroleum vapors were not detected at the 6' depth on the excavation sidewalls.

After discussion with DENR representative Mr. Scott Bickler, four soil samples were submitted for laboratory analysis. The samples were analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline. Petroleum was not detected at or above the method detection limits in three samples. Some ethylbenzene and xylenes concentrations (below the SD Tier 1 Action Levels) were detected in Sample #9 at 12'.

Soil Disposal

Contaminated soil was hauled to the City of Mitchell Landfill. Based on the dimensions of the completed excavation, the volume of soil removed was approximately 420 in-place cubic yards, or 546 loose cubic yards using a 30% expansion factor. The landfill reportedly received 533 loose cubic yards of soil. On November 7-8, 2005, the excavation was backfilled. Concrete pavement was also replaced the same week.

DISCUSSION

Free product was observed in MW5 for the first time. Previous monitoring events in 2003 and 2004 did not have product. The removal of petroleum saturated soils in the immediate up gradient area should be beneficial in reducing the product thickness and/or occurrence in MW5. Consideration should be given to advancing soil borings and installing monitoring wells on the south side of 7th Street to further define the extent and concentrations of petroleum, and periodically checking MW5 and other wells for the presence of free phase product.

CONCLUSIONS

Excavation of soils with free phase petroleum product was conducted on November 7, 2005. One area with product saturated soils (immediately adjacent to MW5) was not excavated. We understand DENR intends to review this information and determine what future actions are necessary.


STANDARD OF CARE

Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and 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.

REMARKS

GeoTek Engineering & Testing Services, Inc. appreciates the opportunity to have been of service on this project. Please contact us if you have questions concerning this report or project.

GeoTek Engineering & Testing Services, Inc.


Gerald K. Zutz, PE
Project Engineer
CPRR #R060

cc: DENR, Pierre, Mr. Doug Miller
DENR, Sioux Falls, Mr. Scott Bickler
PRCF, Pierre, Mr. John McVey
PRCF, Sioux Falls, Mr. Larry Headrick

TABLE 1
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW1	98.52	4-30-03	--	9.30	--	89.22
		7-28-03	--	9.12	--	89.40
		11-20-03	--	9.42	--	89.10
		2-12-04	--	9.87	--	88.65
		11-7-05	--	9.65	--	88.87
MW2	97.66	4-30-03	8.68	9.31	0.63	88.35
		7-28-03	8.42	9.08	0.66	89.24
		11-20-03	8.80	9.08	0.28	88.86 *
		2-12-04	9.25	9.73	0.48	88.41 *
		11-7-05	9.10	9.47	0.37	88.56
MW3	97.28	7-28-03	--	8.32	--	88.96
		11-20-03	--	8.60	--	88.68
		2-12-04	--	8.93	--	88.35
		11-7-05	--	8.77	--	88.51
MW4	98.31	7-28-03	--	9.32	--	88.99
		11-20-03	--	9.91	--	88.40
		2-12-04	--	10.48	--	87.83
		11-7-05	--	9.99	--	88.32

Table Continued

TABLE 1 CONTINUED
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW5	97.12	7-28-03	--	8.36	--	88.76
		11-20-03	--	8.83	--	88.29
		2-12-04	--	9.27	--	87.85
		11-7-05	8.79	9.14	0.35	88.33

Notes:

Top of riser elevations referenced the floor of the building (arbitrary datum).

See Figure 1 for well locations and estimated groundwater contour map.

* = trace of product bailed; new absorbent sock installed.

TABLE 2
EXCAVATION SOIL SAMPLE PID READINGS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Soil Profile	Depth (feet)	Parts Per Million
1	6	1
	9	+200
	11	2
2	6	1
	9	178
	11	2
3	6	ND
	9	+200 *
	12	4
4	12	13 *
5	6	11
	9	+200
	12	7
6	6	2
	9	138
	11	4
7	11	115 *
8	6	ND
	9	89
	12	115
9	6	2
	9	110
	12	190 *
10	6	3
	9	76
	12	145
11	6	2
	9	146
12	9	35

Note: See Figure 1 for soil sample locations.

All readings are in parts per million (ppm) total organic vapors.

Soil vapor headspace analysis was performed at the site with a photoionization detector (PID) calibrated to a benzene standard.

* Duplicate soil sample submitted for lab analysis.

LEGEND

- MONITORING WELL
- SOIL BORING



SCALE: 1"=30'

ADJACENT BLDG

PROPERTY LINE

VENTS
9.9

CONCRETE
SB1

CANOPY

88.60'
CASEY'S BUILDING
(NO BASEMENT)

MW1
88.87

SIDEWALK

88.60'

ASPHALT
PARKING LOT

CONCRETE
MW4
88.32

DISPENSER PUMP

MW2
88.56

SIDEWALK

S82

UST'S & PIPING

MW3
88.51

WATER

NORTH MAIN STREET

SIGN

SIDEWALK

GRASS

CONCRETE

GRASS

ASPHALT

SB3
MW5
88.33

WEST 7TH AVENUE

WATER LEVELS OF 11-7-05

FIGURE 1
ESTIMATED GROUNDWATER CONTOUR MAP
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD.

DC\JERRY\02-A834

PROJECT #: 02-A83

DRAWN BY: RDS

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

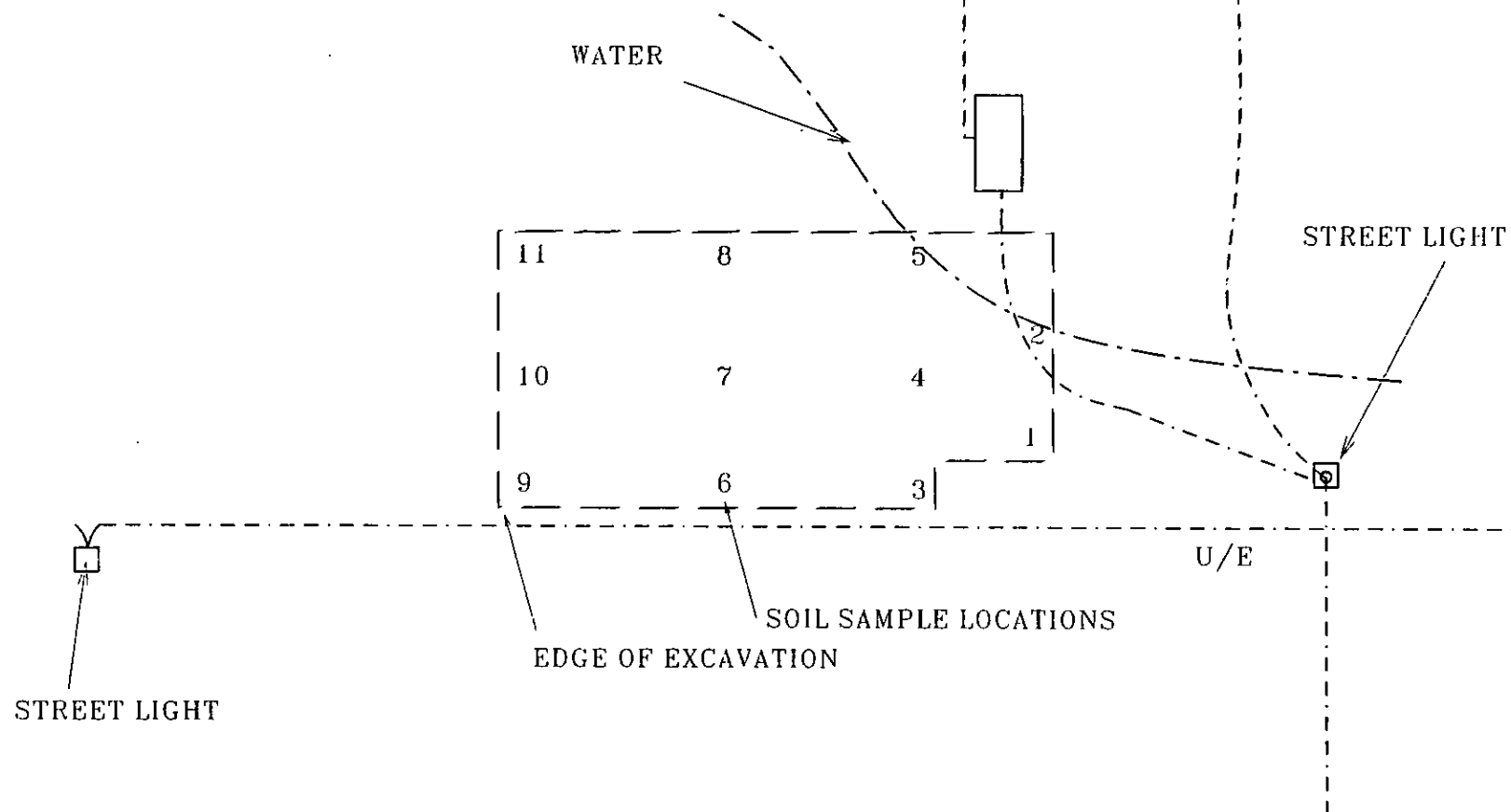


FIGURE 3
SOIL SAMPLE LOCATIONS
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD.

PROJECT #: 02-A83

DRAWN BY: RDS

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 19473

PROJECT:

DATE: November 16, 2005

CASEY'S GENERAL STORE
MITCHELL, SD

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: November 07, 2005

Casey's General Stores, Inc.

DATE RECEIVED: November 08, 2005

PO Box 3001

Ankeny, IA 50021

PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
#3 - 9'	2749-05					
	11/15/2005	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
#4 - 12'	2750-05					
	11/15/2005	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
#7 - 11'	2751-05					
	11/15/2005	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg



REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 19473

PROJECT:

DATE: November 16, 2005

CASEY'S GENERAL STORE
MITCHELL, SD

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: November 07, 2005

Casey's General Stores, Inc.

DATE RECEIVED: November 08, 2005

PO Box 3001

Ankeny, IA 50021

PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
#9 - 12'	2752-05					
	11/15/2005	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Ethylbenzene	0.46	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	Xylenes	3.39	mg/kg	0.2 mg/kg
	11/15/2005	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	11/15/2005	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773

SN: 19473

CHAIN OF CUSTODY RECORD
Analytical Request

LAB: Geo Tek

GEOTEK PROJECT NAME Casey's General Store

Geotek Project # 02-A83

TRANSMITTAL OF RESULTS

Address 701 N. Main St

Geotek Project Manager JKZ

Report To _____

Mitchell, SD

P.O. #/Billing Reference _____

Fax? _____

Bill To _____

Express Mail? _____

Standard Mail? _____

Sampled by (PRINT) JERRY ZUTZ Phone# _____

Sampler Signature [Signature]

Date Sampled 11-7-05

ANALYSIS REQUESTED

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY METHODS (State Required)	BTEX	TH as Gasoline	Napthalene	TH as Fuel Oil	TH as Waste Oil	Benzene Toluene	MTBE	n-Hexane	Speed of Analysis No. days standard if other	Remarks
2749	#3 - 9'	Soil	1	+200	SD DENR	X	X					X			
2750	#4 - 12'	"	1	13	"	X	X					X			
2751	#7 - 11'	"	1	115	"	X	X					X			
2752	#9 - 12'	"	1	190	"	X	X					X			

Relinquished by Sampler: (Signature)

DATE/TIME

11-8-05 10:15

Received by Shipper: (Signature)

DATE/TIME

Method of Shipment:

Hand Carry

Delivered by Shipper: (Signature)

DATE/TIME

Received by Laboratory: (Signature)

DATE/TIME

11-8-05 10:15

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

SITE SUMMARY

Date: December 6, 2005

Department File No. 2002.237

Site Name: Casey's General Store

Responsible Party: Casey's General Stores, Inc.

Location (address): 701 N. Main Street

City: Mitchell, South Dakota

Latitude/Longitude: 43°42'57"N / 98°01'33"W

Consultant: GeoTek Engineering & Testing Services, Inc.

Source: Dispensers, piping, fills, overfills

Current Site Classification: 4

Circle All That Apply:

Land Use: Residential, Industrial, Rural, Other: Commercial

Type of Corrective Action: Excavation, Soil Vapor Extraction, Air Sparging, Bio-Venting, Monitoring, Engineering Control (specify type), Additional Information:

Utilities Investigated: Water, Sewer, Telephone, CATV, Storm Water, Other:

Environmental Media Impacted: Surface Soil <3' below ground surface, Subsurface Soil >3' below ground surface, Groundwater, Surface Water, Indoor Air, Utilities, Outdoor Air, Other:

Cubic Yards of Soil Excavated/treated: 70 in-place cubic yards (2002); 420 in -place cubic yards (2005)

Name of Landfill/Landfarm: Soiltec LLC, Mitchell, SD (2002); City of Mitchell Landfill, Mitchell, SD (2005)

Distance to and Name of Closest Surface Water: approximately 1/2 mile southwest to Dry Creek

Depth/Distance to and Name of Closest Aquifer: approximately 60' deep to Cretaceous Niobrara Aquifer

Was Free Product Present? Yes, in MW2 and MW5

Number of Monitoring Wells Installed: 5

Number of Monitoring Wells Properly Closed: 1

Wellfield or Wellhead Protection Area: No

Off Site Migration of Contamination (Yes/No) and **Direction:** south

Sensitive Receptors Within 500 feet of Plume: Yes

Proposed Action: Closure/Inactive, Tier 2 Assessment, Tier 3 Assessment, Remediation, Eliminate Exposure Route (specify): Advance additional soil borings, install additional monitoring wells, , conduct free product checks.

Signature of Responsible Party

For Department Use:

Reviewer:



2002.237
**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

DENR – Sioux Falls Office
4305 S Louise Ave
Sioux Falls, SD 57106

November 2, 2005

GLENN NORGART
CASEYS GENERAL STORES, INC
PO BOX 3001
ANKENY, IA 50021-0030

RE: Casey's General Stores Inc., 701 North Main Street, Mitchell, SD
SDDENR File # 2002.237

Dear Mr. Norgart:

In correspondence dated April 21, 2004, the Department of Environment and Natural Resources (DENR) agreed the use of excavation was an appropriate form of corrective action. Subsequently, DENR was informed by your consultant, there were difficulties in securing an excavator.

Initially, excavation of the contaminated soils was scheduled for October 2004. However, due to the lack of a nearby permitted disposal site the excavation was rescheduled for the Spring of 2005. Corrective actions have not taken place yet and are still required at this site. DENR will still allow the use of excavation, as outlined in the DENR's April 2004, letter, to address the impacted soils. However, a firm schedule for completion of this corrective action must be submitted to DENR. If additional delays are encountered, in implementing the excavation corrective action, alternate correctives will have to be evaluated.

Free phase product was measured at this site during the February 2004 monitoring event. Given the length of time that has passed, DENR is requiring current site conditions, be determined by conducting a monitoring event of all wells. This monitoring event must be done within the next quarter and prior to future excavation activities.

Thank you for your cooperation in this matter. If you have any further question regarding this letter, please contact me at (605) 362-3500.

Sincerely,

Scott J. Bickler

C: Doug Miller, DENR
✓ Dennis Rounds, PRCF
Jerald K. Zutz, Geotek Engineering



File Copy
2002.237

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

DENR – Sioux Falls Office
4305 S Louise Ave
Sioux Falls, SD 57106

April 21, 2004

GLENN NORGART
CASEYS GENERAL STORES, INC
PO BOX 3001
ANKENY, IA 50021-0030

RE: Casey's General Stores Inc., 701 North Main Street, Mitchell, SD
SDDENR File # 2002.237



Dear Mr. Norgart:

The Department of Environment and Natural Resources (DENR) has completed its review of Geotek Engineering's second 'Quarterly Groundwater Monitoring' report dated February 23, 2004, for the above referenced facility. The report confirms the consistent detection of free phase product as gasoline in monitoring well two (MW-2).

Based on the results of the two monitoring events it has been determined the best course of action is to conduct an excavation in the area south of the canopy. The excavation limits are as follows: south of the canopy to the sidewalk and west of sign (in southeast corner of property) to no further than MW-4. The estimated depth of the excavation is to be around nine feet. Though these are the excavation limits, it does not mean that excavation must extend to these limits. The section of the water main south of MW-5 must be replaced to eliminate any risks. This is especially important given its unknown composition.

Figure 2 of Geotek's report indicates that MW-5 is right next to the water main that is to be replaced. MW-5 will most likely be excavated during the replacement of the water main. Based on the excavation to take place and eliminating risk to the water main, MW-5 will not need to be replaced. It should be noted that a sufficient number of soil samples from the trench walls will need to be taken to show that risks have been eliminated.

Thank you for your cooperation in this matter. If you have any further question regarding this letter, please contact me at (605) 362-3500.

Sincerely,

Scott J. Bickler

C: ☒ Doug Miller, DENR
Dennis Rounds, PRCF
Jerald K. Zutz, Geotek Engineering



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773

SB
2002.237
C.C.

February 23, 2004

Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-8045

Attn: Mr. Glenn Norgart

Subj: Quarterly Groundwater Monitoring
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237
PRCF #6643



Dear Mr. Norgart:

Introduction

This report presents the results of the recent groundwater monitoring for the referenced project. The purpose of this letter is to present the results of the water level measurements and water quality sampling and analysis. Additional copies are being sent as noted below.

This work was performed in accordance with our February 6, 2003 amendment to the October 1, 2002 contract. The amendment was reviewed and approved by the Petroleum Release Compensation Fund (PRCF) letter of March 27, 2003.

Water Level Measurements

Depth to groundwater was measured in monitoring wells MW1-5 on February 12, 2004. Depth to groundwater was approximately 9-10' below grade. The monitoring well water level data is presented in Table 1. A groundwater elevation map for the February 12, 2004 event is attached as Figure 1. The groundwater gradient appears to be to the south.

A measurement of free phase product thickness in MW2 was made on February 12, 2004. The product measurement is summarized on Table 1. Bailing of product and installation of an absorbent sock was conducted as noted on Table 1.

Groundwater Sampling and Analysis

Groundwater samples were collected from monitoring wells MW1, MW3, MW4, and MW5 on February 12, 2004. The samples were submitted to a chemistry laboratory for hydrocarbon analysis. The samples were analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline. The water quality analytical data is provided on Table 2 and the recent laboratory report is attached.

Petroleum was detected in MW1, MW3, and MW5. The South Dakota groundwater quality standard for benzene is exceeded in MW1, MW2 (free product), and MW5.

Nearby Water and Sewer Service Lines

The November 13, 2003 DENR letter required information be submitted on the service line for the Enchanted World Doll Museum building located across the street to the south.

Although there are apparently no written records at the City of Mitchell, the water service line to the Enchanted World Doll Museum building is believed to be 1" lead pipe, on the east side of the building (shown on Figure 2). The depth of the water service line is believed to be about 5-6' below grade. The sewer pipe is suspected to be 4" clay tile, located on the west side of the building (shown on Figure 2). The sewer service line may be up to about 12-13' deep, as the nearest manhole is 13' deep.

Conclusions

The November 13, 2003 DENR letter required two quarterly groundwater monitoring and free product recovery events, and submittal of information on a nearby water service line. This letter details the second groundwater monitoring event and known information about the nearby service. We understand DENR intends to review this information and determine what future actions are necessary.

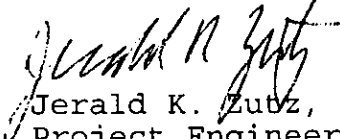
Standard of Care

Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and 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.

Remarks

GeoTek Engineering & Testing Services, Inc. appreciates the opportunity to have been of service on this project. Please contact us if you have questions concerning this report or project.

GeoTek Engineering & Testing Services, Inc.


Jerald K. Zubz, PE
Project Engineer
CPRR #R060

cc: DENR, Pierre, Mr. Doug Miller
DENR, Sioux Falls, Mr. Scott Bickler
PRCF, Pierre, Mr. John McVey
PRCF, Sioux Falls, Mr. Larry Headrick

TABLE 1
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW1	98.52	4-30-03	--	9.30	--	89.22
		7-28-03	--	9.12	--	89.40
		11-20-03	--	9.42	--	89.10
		2-12-04	--	9.87	--	88.65
MW2	97.66	4-30-03	8.68	9.31	0.63	88.35
		7-28-03	8.42	9.08	0.66	89.24
		11-20-03	8.80	9.08	0.28	88.86 *
		2-12-04	9.25	9.73	0.48	88.41 *
MW3	97.28	7-28-03	--	8.32	--	88.96
		11-20-03	--	8.60	--	88.68
		2-12-04	--	8.93	--	88.35
MW4	98.31	7-28-03	--	9.32	--	88.99
		11-20-03	--	9.91	--	88.40
		2-12-04	--	10.48	--	87.83
MW5	97.12	7-28-03	--	8.36	--	88.76
		11-20-03	--	8.83	--	88.29
		2-12-04	--	9.27	--	87.85

Notes:

Top of riser elevations referenced the floor of the building (arbitrary datum).

See Figure 1 for well locations and estimated groundwater contour map.

* = trace of product bailed; new absorbent sock installed.

TABLE 2
GROUNDWATER SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Well Number	Date	Benzene	Toluene	Ethyl- Benzene	Xylenes	MTBE	TPH as Gasoline
MW1	4-30-03	0.010	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	0.534	<0.002	<0.002	<0.005	<0.002	0.830
	2-12-04	0.071	<0.002	<0.002	<0.005	<0.002	<0.100
MW3	7-28-03	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	2-12-04	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
MW4	7-28-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	2-12-04	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
MW5	7-28-03	3.70	7.57	0.20	2.89	<0.02	33.00
	11-20-03	5.04	4.39	1.01	2.58	<0.02	23.70
	2-12-04	3.700	4.080	0.820	2.320	0.042	20.500
<hr/> SDGWQS		0.005	1	0.7	10	--	10

Notes: All values in parts per million (ppm).

SDGWQS: South Dakota Groundwater Quality Standards (ARSD 74:03:15:03).

Values in **bold print** exceed SDGWQS.

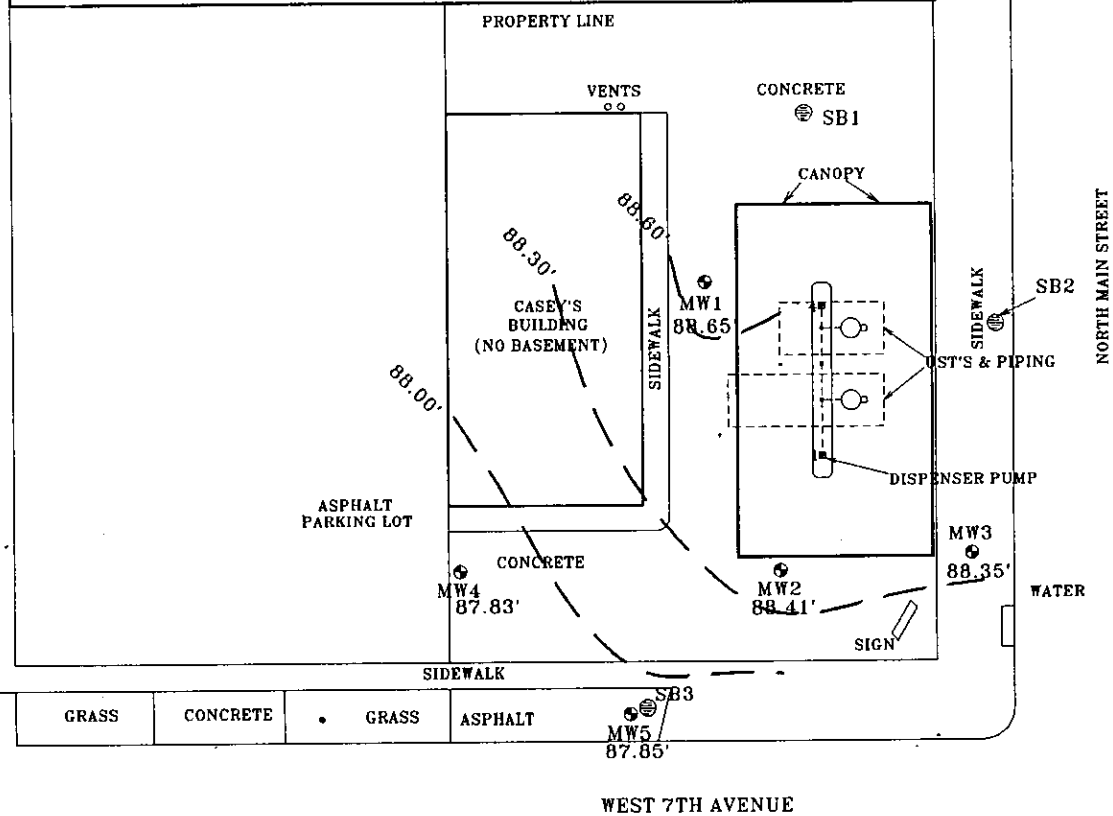
Recent laboratory report attached.

See Figure 1 for well locations.



LEGEND

- MONITORING WELL
- ⊙ SOIL BORING



WATER LEVELS OF 02/12/04

FIGURE 1
ESTIMATED GROUNDWATER CONTOUR MAP
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD.

PROJECT #: 02-A83

DRAWN BY: KK

CHECKED BY: *[Signature]*

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

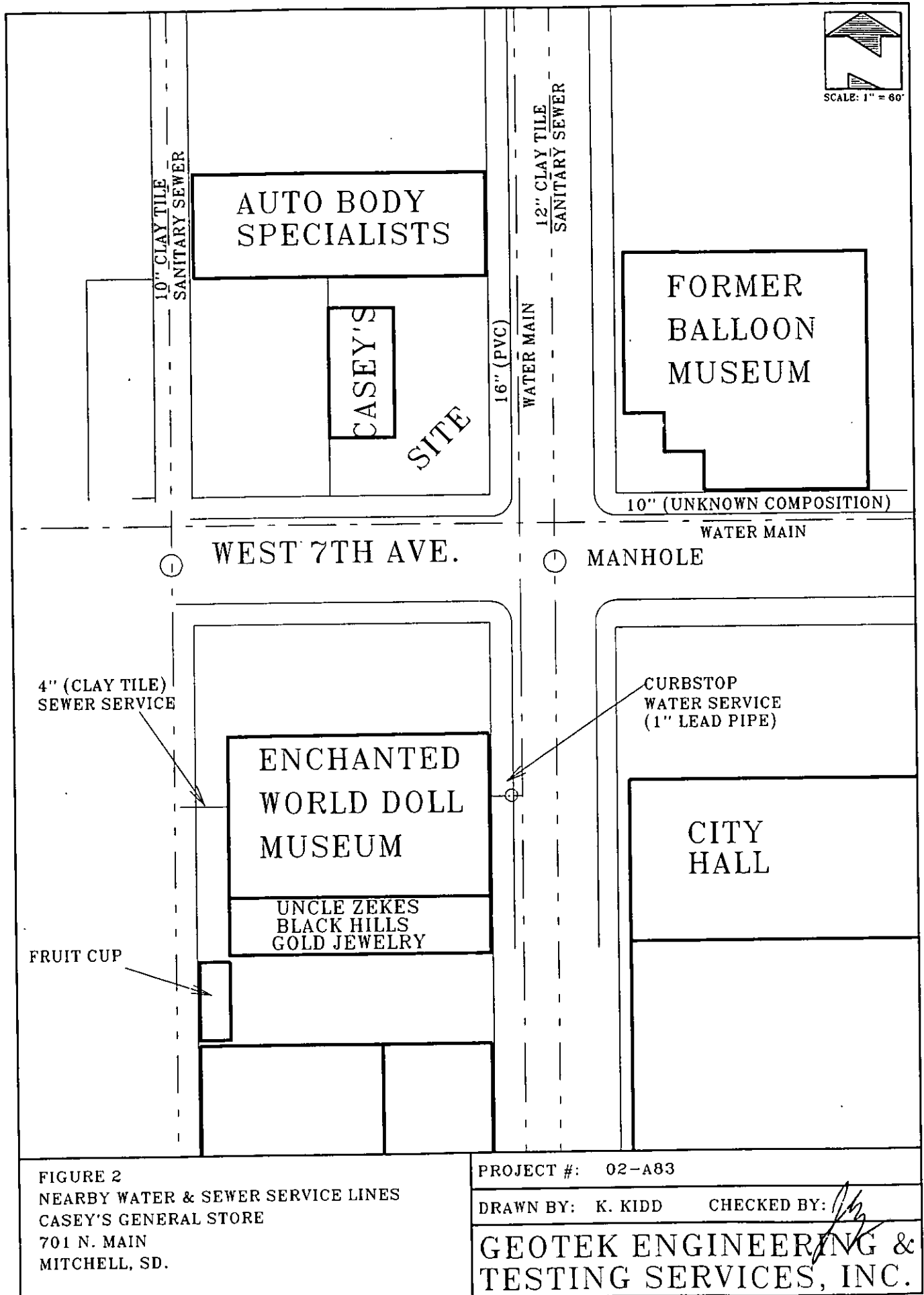


FIGURE 2
NEARBY WATER & SEWER SERVICE LINES
CASEY'S GENERAL STORE
701 N. MAIN
MITCHELL, SD.

PROJECT #: 02-A83

DRAWN BY: K. KIDD

CHECKED BY: *[Signature]*

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 18290

PROJECT:

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

DATE: February 16, 2004

SAMPLE MEDIUM: WATER

CLIENT:

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE SAMPLED: February 12, 2004

DATE RECEIVED: February 12, 2004

PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

Site	Lab ID#	Method	Compound Analyzed	Test Results	Units	Method Detection Limit
MW #1	1112-04					
	2/16/2004	EPA 602 (modified)	Benzene	0.071	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	2/16/2004	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	2/16/2004	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L
Comments: Sample pH <2.						
MW #3	1113-04					
	2/16/2004	EPA 602 (modified)	Benzene	<0.002	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	2/16/2004	EPA 602 (modified)	MTBE	0.012	mg/L	0.002 mg/L
	2/16/2004	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L
Comments: Sample pH <2.						
MW #4	1114-04					
	2/16/2004	EPA 602 (modified)	Benzene	<0.002	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	2/16/2004	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	2/16/2004	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	2/16/2004	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L
Comments: Sample pH <2.						



REPORT OF ANALYTICAL RESULTS

PROJECT # : 02-A83-3

CHAIN OF CUSTODY # 18290

PROJECT:

DATE: February 16, 2004

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: WATER

CLIENT:

DATE SAMPLED: February 12, 2004

Casey's General Stores, Inc.

DATE RECEIVED: February 12, 2004

PO Box 3001

Ankeny, IA 50021

PHONE:

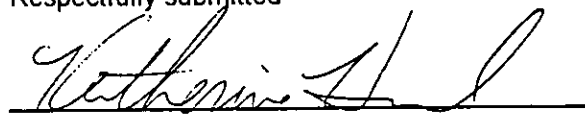
SAMPLER: Jeff Thorsheim 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW #5	1115-04					
	2/16/2004	EPA 602 (modified)	Benzene	3.700	mg/L	0.02 mg/L
	2/16/2004	EPA 602 (modified)	Toluene	4.080	mg/L	0.02 mg/L
	2/16/2004	EPA 602 (modified)	Ethylbenzene	0.820	mg/L	0.02 mg/L
	2/16/2004	EPA 602 (modified)	Xylenes	2.320	mg/L	0.05 mg/L
	2/16/2004	EPA 602 (modified)	MTBE	0.042	mg/L	0.02 mg/L
	2/16/2004	California USGS	TPH as Gasoline	20.500	mg/L	1 mg/L

Comments: Sample pH <2.

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor



GEOTEK ENGINEERING & TESTING SERVICES, INC.

909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773

SN: 18290

CHAIN OF CUSTODY RECORD Analytical Request

LAB: Geotek

GEOTEK PROJECT NAME Casey's General store

Geotek Project # 02-AG3

TRANSMITTAL OF RESULTS

Address 701 N. Main

Geotek Project Manager Jerry Zutz

Report To _____

Mitchell S. Dak

P.O. #/Billing Reference _____

Fax? _____

Bill To Geotek

Express Mail? _____

Standard Mail? _____

Sampled by (PRINT) Red Phone# _____

Sampler Signature [Signature] Date Sampled 2-12-04

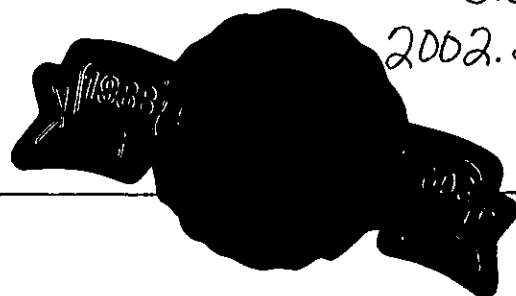
Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY (State Agency)	BTEX	TH as	Naphthalene	TH as Fuel Oil	TH as Waste Oil	Benzene Toluene	MTBE	n-Hexane	Speed of Analysis No. days standard	Remarks
1112	mw 1	H ₂ O	3000			X	X					X			
1113	mw 3	X	X			X	X					X			
1114	mw 4	X	X			X	X					X			Slight odor
1115	mw 5	X	X			X	X					X			Strong odor

Relinquished by Sampler: (Signature) <u>[Signature]</u>	DATE/TIME <u>2-12-04</u>	Received by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME <u>2/12/04</u>	Method of Shipment: <u>K47</u>
Delivered by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME <u>2-12-04</u>	Received by Laboratory: (Signature) <u>[Signature]</u>	DATE/TIME <u>2/12/04</u>	

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

GEOTEK

GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773



SB
2002.237

December 3, 2003

COPY

Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-8045

Attn: Mr. Glenn Norgart

Subj: Quarterly Groundwater Monitoring
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237
PRCF #6643



Dear Mr. Norgart:

Introduction

This report presents the results of the recent groundwater monitoring for the referenced project. The purpose of this letter is to present the results of the water level measurements and water quality sampling and analysis. Additional copies are being sent as noted below.

This work was performed in accordance with our February 6, 2003 amendment to the October 1, 2002 contract. The amendment was reviewed and approved by the Petroleum Release Compensation Fund (PRCF) letter of March 27, 2003.

Water Level Measurements

Depth to groundwater was measured in monitoring wells MW1-5 on November 20, 2003. Depth to groundwater was approximately 9-10' below grade. The monitoring well water level data is presented in Table 1. A groundwater elevation map for the November 20, 2003 event is attached as Figure 1. The groundwater gradient appears to be to the south.

A measurement of free phase product thickness in MW2 was made on November 20, 2003. The product measurement is summarized on Table 1. Bailing of product and installation of an absorbent sock was conducted as noted on Table 1.

Groundwater Sampling and Analysis

Groundwater samples were collected from monitoring wells MW1, MW3, MW4, and MW5 on November 20, 2003. The samples were submitted to a chemistry laboratory for hydrocarbon analysis. The samples were analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline. The water quality analytical data is provided on Table 2 and the recent laboratory report is attached.

Petroleum was detected in MW1 and MW5 at 0.830 and 23.70 ppm TPH as gasoline respectively. The South Dakota groundwater quality standard for benzene is exceeded in MW1, MW2 (free product), and MW5.

Conclusions

The November 13, 2003 DENR letter required two quarterly groundwater monitoring and free product recovery events, and submittal of information on a nearby water service line. The second event and submittal of water line information is planned for February 2004.

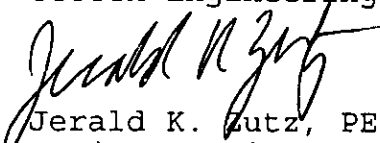
Standard of Care

Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and 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.

Remarks

GeoTek Engineering & Testing Services, Inc. appreciates the opportunity to have been of service on this project. Please contact us if you have questions concerning this report or project.

GeoTek Engineering & Testing Services, Inc.


Jerald K. Lutz, PE
Project Engineer
CPRR #R060

cc: DENR, Pierre, Mr. Doug Miller
DENR, Sioux Falls, Mr. Scott Bickler
PRCF, Pierre, Mr. John McVey
PRCF, Sioux Falls, Mr. Larry Headrick

TABLE 1
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW1	98.52	4-30-03	--	9.30	--	89.22
		7-28-03	--	9.12	--	89.40
		11-20-03	--	9.42	--	89.10
MW2	97.66	4-30-03	8.68	9.31	0.63	88.35
		7-28-03	8.42	9.08	0.66	89.24
		11-20-03	8.80	9.08	0.28	88.86 *
MW3	97.28	7-28-03	--	8.32	--	88.96
		11-20-03	--	8.60	--	88.68
MW4	98.31	7-28-03	--	9.32	--	88.99
		11-20-03	--	9.91	--	88.40
MW5	97.12	7-28-03	--	8.36	--	88.76
		11-20-03	--	8.83	--	88.29

Notes:

Top of riser elevations referenced the floor of the building (arbitrary datum).

See Figure 1 for well locations and estimated groundwater contour map.

* = trace of product bailed; new absorbent sock installed.

TABLE 2
GROUNDWATER SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Well Number	Date	Benzene	Toluene	Ethyl- Benzene	Xylenes	MTBE	TPH as Gasoline
MW1	4-30-03	0.010	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	0.534	<0.002	<0.002	<0.005	<0.002	0.830
MW3	7-28-03	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
MW4	7-28-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
	11-20-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
MW5	7-28-03	3.70	7.57	0.20	2.89	<0.02	33.00
	11-20-03	5.04	4.39	1.01	2.58	<0.02	23.70

<u>SDGWQS</u>	<u>0.005</u>	<u>1</u>	<u>0.7</u>	<u>10</u>	<u>--</u>	<u>10</u>
---------------	--------------	----------	------------	-----------	-----------	-----------

Notes: All values in parts per million (ppm).

SDGWQS: South Dakota Groundwater Quality Standards (ARSD 74:03:15:03).

Values in **bold print** exceed SDGWQS.

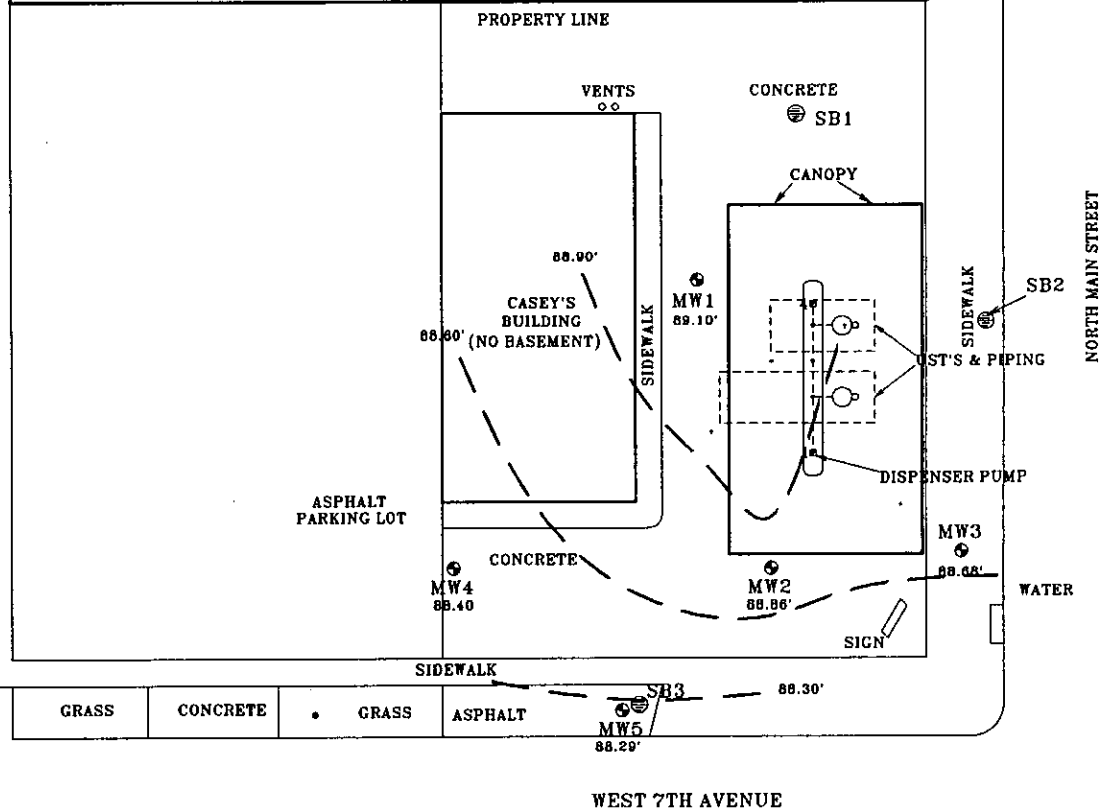
Recent laboratory report attached.

See Figure 1 for well locations.



LEGEND

- MONITORING WELL
- ⊙ SOIL BORING



WATER LEVELS OF 11/20/03

FIGURE 1
ESTIMATED GROUNDWATER CONTOUR MAP
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD.

PROJECT #: 02-A83

DRAWN BY: KK

CHECKED BY: 

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 18214

PROJECT:

DATE: November 26, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: WATER

CLIENT:

DATE SAMPLED: November 20, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: November 21, 2003

PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

Site	Lab ID#	Method	Compound Analyzed	Test Results	Units	Method Detection Limit
MW #1	2900-03					
	11/24/2003	EPA 602 (modified)	Benzene	0.534	mg/L	0.002 mg/L
	11/24/2003	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	11/24/2003	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	11/24/2003	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	11/24/2003	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	11/24/2003	California USGS	TPH as Gasoline	0.830	mg/L	0.1 mg/L
Comments: Sample pH <2.						
MW #3	2901-03					
	11/24/2003	EPA 602 (modified)	Benzene	<0.002	mg/L	0.002 mg/L
	11/24/2003	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	11/24/2003	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	11/24/2003	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	11/24/2003	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	11/24/2003	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L
Comments: Sample pH <2.						
MW #4	2902-03					
	11/25/2003	EPA 602 (modified)	Benzene	<0.002	mg/L	0.002 mg/L
	11/25/2003	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	11/25/2003	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	11/25/2003	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	11/25/2003	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	11/25/2003	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L
Comments: Sample pH <2.						

REPORT OF ANALYTICAL RESULTS

PROJECT # : 02-A83-3

CHAIN OF CUSTODY # 18214

PROJECT:

DATE: November 26, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: WATER

CLIENT:

DATE SAMPLED: November 20, 2003

Casey's General Stores, Inc.

DATE RECEIVED: November 21, 2003

PO Box 3001

Ankeny, IA 50021

PHONE:

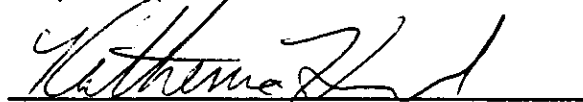
SAMPLER: Jeff Thorsheim 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW #5	2903-03					
	11/21/2003	EPA 602 (modified)	Benzene	5.04	mg/L	0.02 mg/L
	11/21/2003	EPA 602 (modified)	Toluene	4.39	mg/L	0.02 mg/L
	11/21/2003	EPA 602 (modified)	Ethylbenzene	1.01	mg/L	0.02 mg/L
	11/21/2003	EPA 602 (modified)	Xylenes	2.58	mg/L	0.05 mg/L
	11/21/2003	EPA 602 (modified)	MTBE	<0.02	mg/L	0.02 mg/L
	11/21/2003	California USGS	TPH as Gasoline	23.70	mg/L	1 mg/L

Comments: Sample pH <2.

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor

**909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773**

Analytical Request

GEOTEK PROJECT NAME City's General Store

Geotek Project # 02-178

TRANSMITTAL OF RESULTS

Address 101 N. Main

Geotek Project Manager Jerry Zutz

Report To _____

ms: 1.1.11.8.12.1

P.O. #/Billing Reference

Fax? _____

Mitchell, S. Dark

Bill To Gutik

Express Mail? _____

Standard Mail? _____

Sampled by (PRINT) Red Phone#

Sampler Signature [Signature] Date Sampled 11-6-63

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY (State)	BTEX	TH as	Naphth	TH as Fuel O	TH as Waste	Benzene Toluene	MTB	n-He	Speed & No. days standard	Remarks
2900	NW 1	H ₂ O	300			X	X					X			
2901	NW 3	X	X			X	X					X			
2902	NW 4	X	X			X	X					X			
2903	NW 5	X	X			X	X					X			Strong odor
	N														

14°

Relinquished by Sampler: (Signature)

DATE/TIME
11-21-03

Received by Shipper: (Signature)

DATE/TIME

Method of Shipment:

Delivered by Shipper: (Signature)

DATE/TIME

Received by Laboratory: (Signature)

DATE/TIME

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____



FILE COPY
2002.237

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

DENR – Sioux Falls Office
4305 S Louise Ave
Sioux Falls, SD 57106

November 13, 2003

GLENN NORGART
CASEYS GENERAL STORES, INC
PO BOX 3001
ANKENY, IA 50021-0030

RE: Casey's General Stores Inc., 701 North Main Street, Mitchell, SD
SDDENR File # 2002.237

Dear Mr. Norgart:

The Department of Environment and Natural Resources (DENR) has completed its review of Geotek Engineering's report 'Tier 2 Assessment' dated September 8, 2003, for the above referenced facility. The report confirms that there is a limited extent of petroleum impacted soils and that free phase product as gasoline was detected in monitoring well two (MW-2).

The two concerns at this site are 1) the potential risk to the water line south of Casey's General Store and 2) the presence of free phase product in MW-2. Before determining the remedial action, DENR is requiring two more quarterly monitoring and free product recovery events. Based on these next two consecutive events DENR will determine what remedial activities need to be taken.

However, during this time the service line for the Enchanted World Doll Museum needs to be located and depth and construction determined.

Thank you for your cooperation in this matter. If you have any further question regarding this letter, please contact me at (605) 362-3500.

Sincerely,

Scott J. Bickler

Scott J. Bickler

C: Doug Miller, DENR
Dennis Rounds, PRCF
Jerald K. Zutz, Geotek Engineering

SB
2002.237

TIER 2 ASSESSMENT
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA

GEOTEK #02-A83 DENR #2002.237 PRCF #6643



GEOTEK ENGINEERING & TESTING SERVICES, INC.



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773

COPY

September 8, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-0030

Attn: Mr. Glenn Norgart

Subj: Tier 2 Assessment
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237
PRCF #6643



Dear Mr. Norgart:

This correspondence presents the written report on the Tier 2 Assessment for the referenced site. We are enclosing one copy of the report. Additional copies are being sent as noted below.

We thank you for the opportunity of providing our services on this project. Please let us know if you have questions or if we may be of further assistance.

Respectfully submitted,

Jerald K. Zutz
Project Manager
PE/Remediator #5083

cc: DENR, Pierre, Ms. Kim McIntosh
DENR, Sioux Falls, Mr. Scott Bickler
PRCF, Pierre, Mr. John McVey
PRCF, Sioux Falls, Mr. Larry Headrick

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TIER 2 ASSESSMENT
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA

GEOTEK #02-A83

INTRODUCTION

Purpose and Scope

The purpose of our work was to conduct a Tier 2 Assessment. The scope of our work was limited to:

1. Mobilizing a drill rig, crew and environmental technician to the site.
2. Conducting a receptor and utility survey for the site and immediate vicinity. Identifying, as nearly as possible, the construction, location, and depth of nearby underground utilities.
3. Advancing eight soil borings to approximately 15-17' deep, and completing five as groundwater monitoring wells.
4. Collecting soil samples from the borings, and scanning the samples in the field with a photoionization detector (PID) for total organic vapors.
5. Obtaining and submitting approximately one soil sample from each boring to a chemistry laboratory for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline analysis.
6. Obtaining and submitting groundwater samples from the monitoring wells to a chemistry laboratory for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline analysis.
7. Measuring depth to groundwater in the monitoring wells.
8. Scanning nearby buildings, basements, and utility manholes with a PID for organic vapors as an indication of potential petroleum contamination.
9. Preparing a report presenting our data, opinions, and recommendations.



Authorization

This work was performed in accordance with our February 6, 2003 amendment to the October 1, 2002 contract. The amendment was reviewed and approved by the Petroleum Release Compensation Fund (PRCF) letter of March 27, 2003.

BACKGROUND INFORMATION

Site Description/Location

The site is located at the northwest corner of the intersection of N. Main Street and W. 7th Avenue in the central part of Mitchell, Davison County, South Dakota (Figure 1). The site consists of a convenience store, a dispenser island, and two gasoline USTs (1-6000 gallon, and 1-10,000 gallon).

Topographic map coverage of the site is provided by the U.S. Geological Survey (USGS) Mitchell Quadrangle 7.5 minute Series Map (1957, photorevised in 1974, Figure 1). The elevation of the site is approximately 1310-20' above mean sea level. Contour lines indicate land in the area is nearly flat. According to the topographic map, the nearest surface water is Dry Run Creek, located about 3200' south. The Creek flows east.

Previous Work

The old dispensers and piping were removed, and new piping, dispensers, and a canopy were installed in October 2002. A soil sample collected at the time had petroleum concentrations above the SD DENR Tier 1 Action Levels. The January 22, 2003 DENR letter required that a Tier 2 Assessment be conducted.

Five soil borings (SB1, SB2, SB3, MW1, MW2) were advanced at the site on April 16, 2003. Soil from SB3 and MW2 had petroleum concentrations. Petroleum was not detected in soil from SB1, SB2, or MW1. On April 30, 2003, free phase petroleum product was encountered in MW2. A trace of petroleum was detected in groundwater from MW1 (GeoTek report #02-A83, dated 6-9-03).

HYDROGEOLOGIC SETTING

Geology

The subject site is underlain by the Quaternary (glacial) Till, Ground Moraine (Christensen, 1989). It is a heterogeneous mixture of boulders, sand, silt, and clay. Outwash (sand and gravel) deposits are often found within clay glacial till.

The bedrock Cretaceous Niobrara Formation is estimated to be at an elevation of about 1100-1150' and perhaps 20-30' thick (Christensen, 1989). The Niobrara Formation is a fractured marl (calcareous clay rock). Below the Niobrara Formation is likely other Cretaceous formations, if present, and then the Precambrian Sioux Quartzite Formation (Christensen, 1989).

There is a poor probability of finding sand or gravel deposits within 25' of the land surface for the site or vicinity (Hammond, 1982).

Groundwater

Based on published literature, there are no known shallow sand and gravel aquifers in the site area. Because of generally poor permeability, groundwater in glacial till is not normally considered to be an aquifer. Nevertheless, groundwater often occurs within about 10' to 15' of the land surface. The direction of the groundwater gradient is often determined by the local topography. The area is nearly flat. Therefore, the gradient cannot be estimated from a large scale topographic map.

Below the glacial till are three identified bedrock aquifers in the site vicinity. They are, in descending order, the Niobrara, Codell, and Dakota Aquifers. The top of the Niobrara is at about 1150' in elevation (Hansen, 1983). A later publication (Christensen, 1989), indicates the top of the Niobrara is at about 1250-1300', and it is 20-40' thick. The top of the Codell is also at about 1250-1300' in elevation, and is about 20' thick. The top of the Dakota is at about 800' in elevation (Hansen, 1983).

We understand the City of Mitchell gets water from Lake Mitchell, which is about two miles northeast of the site (SD DENR, 2000).

Soils

The soil in the vicinity is Clarno-Houdek Loams, 0 to 3% slopes. The series consists of deep, well-drained, nearly level to undulating loamy soils. The soil formed in glacial till on uplands. Runoff is medium, and permeability is moderate in the subsoil and moderately slow in the underlying material (Johnson, 1974).

TIER 2 ASSESSMENT

Soil Boring and Sampling

Five soil borings (SB1, SB2, SB3, MW1, MW2) were advanced at the site on April 16, 2003, and three soil borings (MW3, MW4, MW5) were advanced on July 17, 2003. The boring locations are illustrated on Figure 2. Split barrel sampling was performed at 2-1/2' intervals in all borings except MW5. Split barrel samples were not collected from MW5 as it was advanced near a previous soil boring (SB3) that had recently been sampled.

The subsurface conditions encountered in the soil borings are illustrated on the borings logs in Appendix A. A review of the logs indicates a subsurface profile generally consisting of silty sand, silty clay, or sandy clay to about 4.5-9.5' deep, then underlain by lean clay glacial till. Silty clay and silty sand were encountered above 9' depth. The deeper lean clay had some lenses of sand and silty clay. Depending upon their continuity and extent, sand and silty clay lenses in glacial clay till may or may not be considered aquifer material.

Soil Sample Scanning

Samples recovered from the borings (except MW5) were scanned with a PID for organic vapors as an indication of petroleum contamination. The soil sample PID readings are located on the boring logs in Appendix A opposite the samples upon which the readings were taken. The PID readings are summarized on Table 1.

The results of the PID vapor testing indicated elevated organic vapors (>1.0 parts per million, ppm) were not detected in soil samples from SB1 or MW3. Other borings had elevated organic vapor readings.

Soil Sample Laboratory Analysis

One soil sample from each of borings SB1-3 and MW1-4 with the highest PID reading or from a representative depth were collected and submitted to a chemistry laboratory for analysis. The samples were analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and Total Petroleum Hydrocarbons (TPH) as gasoline. The laboratory reports are attached in Appendix B. The laboratory data is summarized on Table 2.

The analytical data indicates that petroleum concentrations were not detected at or above the method detection limits for the parameters analyzed in soil from SB1, SB2, or MW3. Other borings had some petroleum concentrations. The highest concentrations (exceeding SD Tier 1 action levels) were in SB3 and MW2. The sample from MW2 also exceeded 500 ppm TPH.

Extent of Petroleum Concentrations in Soil

Except for south of SB3, the extent of petroleum concentrations in soil is generally defined by the soil borings. Based on the depth of elevated PID readings and assuming a near surface release, MW1 appears to be closer to a release point than the other boring locations. The highest concentrations of petroleum were in MW2, indicating it was near a release point.

Monitoring Well Installation

Five groundwater monitoring wells were installed at the locations illustrated on Figure 2. Construction details for the wells are illustrated on the boring/well log sheets in Appendix A. MW1-5 were developed (by hand bailing methods) on April 30 or July 28, 2003.

Groundwater Elevations

Depth to groundwater was measured in monitoring wells MW1 and MW2 on April 30, 2003, and in MW1-5 on July 28, 2003. Depth to groundwater was approximately 9' below grade. The monitoring well water level data is presented in Table 3. A groundwater elevation map for the July 28, 2003 event is attached as Figure 4. The groundwater gradient appears to be to the south.

Measurements of free phase product thickness were made in MW2 on April 30 and July 28, 2003. The product measurements are summarized on Table 3.

Water Quality Sampling and Analysis

A groundwater sample was collected from each of monitoring wells MW1, MW3, MW4, and MW5 on either April 30, 2003 or July 29, 2003. A sample was not collected from MW2 because of the presence of free phase petroleum product. The samples were submitted to a chemistry laboratory for hydrocarbon analysis. The samples were analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, and TPH as gasoline. The water quality analytical data is provided on Table 4 and the laboratory reports are attached in Appendix B.

A review of the analytical data indicates that concentrations of petroleum were not detected at or above the method detection limit for the parameters analyzed in MW3 and MW4. Petroleum was detected in MW5 at 33.00 parts per million (ppm) TPH, and 0.010 ppm benzene was detected in MW1. The South Dakota groundwater quality standards are exceeded in MW1 and MW5.

Extent of Petroleum Concentrations in Water

Petroleum was detected or present in groundwater in MW1, MW2, and MW5. Petroleum was not detected in MW3 or MW4. Except for south of MW5, the extent of contaminated groundwater appears to be defined to SD Groundwater Quality Standards.

Nearby Utilities

The buried utilities in the area are as shown on Figure 2.

Water Lines. There is a 10" diameter unknown composition water main line adjacent to the south, and a 6" PVC water main line adjacent to the east. The service line to the building is believed to be small diameter copper. The mains and service lines are reportedly about 5-6' deep. The water mains or their gaskets may be considered susceptible to petroleum permeation if in contact with petroleum soils or free phase petroleum product.

Sanitary Sewer Lines. There is a 12" clay tile sewer main in Main Street adjacent to the east, and a 10" clay tile sewer main in the alley nearby to the west. Based on the measurements from manholes, the sewer main in Main Street is about 9.5' deep adjacent to the site, and the sewer main in the nearby alley is about 13' deep. The site building is reportedly connected to the city sanitary sewer, but it is not certain whether the service line extends to the sewer main on Main Street, or if the service line crosses adjacent property to the west and is connected to the sewer main in the alley. However, there are reportedly two service connection points for the sewer main in the alley that are roughly west of the north and south ends of the site building. The (unknown composition) service line is estimated to be a 4" diameter line, from 5' to 13' deep.

Storm Sewer Lines. There is a storm sewer catch basin near the southeast corner of the site. The storm sewer lines are believed to be of concrete composition (various diameter), relatively shallow (<5'), and located below Main Street.

Other Utilities. There are some buried electric lines in the area of contamination. There are also other buried utilities (electric, telephone, natural gas) outside the area of contamination. These lines are suspected to be buried about 2' deep.

Figure 5 shows a plan view of the location of cross-sections A-A' and B-B'. Figures 6 and 7 are the actual cross-sections. The data indicates that the water service line and water main in West 7th Avenue appear to be mostly above the contaminated soil. The free product in MW2 appears to be mostly within the clay glacial till. However, with a higher water level, there may be potential for contaminants to be near or in contact with the water lines.

There may be some potential for vapor migration. However, the vapors encountered in soil are moderate to low concentrations, mostly defined, and mostly within clay glacial till. Given the shallow mixed and coarse alluvium, there appears to be lesser potential for preferential migration of vapors along loosely or aggregate filled utility trenches.

Vapor Survey

A vapor survey was conducted on April 16, 2003 in the two nearest sewer manholes in the alley (west of the site) and in the two nearest sewer manholes in Main Street (adjacent to the east). Readings were taken near the top, center, and bottom of each manhole. Elevated PID readings (>1.0 ppm) were not detected in the manholes. Figure 3 shows the location of the manholes and sewer mains. The locations are also listed below:

<u>Location</u>	<u>Depth</u>	<u>PID Reading(ppm)</u>
Main & 7th	9.5'	ND
Main & 8th	8'	ND
Alley & 7th	13'	ND
Alley & 8th	14.5'	ND

Nearby Structures

The site building does not have a basement. The closest buildings adjacent to the north, east, and south reportedly do not have basements. However, a house and an apartment building west of the site have basements. The house is about 130' west of the site.

Vicinity Groundwater Use

While it is possible that shallow water wells could exist in the area, none are known to exist.

DISCUSSION

A site conceptual model is attached in Appendix C. Potential risks from the contamination and our comments are listed below:

- soil ingestion/inhalation/dermal contact (construction worker during future potential subsurface work; site concentrations from borings and former excavation do not exceed DENR handbook look up table for surface soil-construction worker),
- free product in contact with water lines (during periods of higher water levels),
- contaminated groundwater in contact with water lines (during periods of higher water levels; note benzene and toluene concentrations in MW5 are above the DENR look up table levels for groundwater in contact with a PVC water line),

- contaminated soil in contact with water lines (significant contaminated soil has not been identified in contact with water lines),
- inhalation of vapors by site building occupants (besides subsurface contaminants, there are also other significant aboveground sources of gasoline vapors),
- vapors in underground utility lines (unknown location for site's sewer service line; vapors not detected in nearby sewer mains on April 16, 2003 event),
- potable water use (no known water supply wells in area),

Of the above potential risks, the main risk appears to be the potential for free product and contaminated groundwater to be in contact with water lines. The current DENR handbook does not allow free product or product saturated soil to be left in contact with a water line.

CONCLUSIONS

With the exception of the area south of SB3/MW5, the extent of petroleum contaminated soil and groundwater appears to be defined. There is a risk of free product and contaminated groundwater to be in contact with the site's water service line (believed to be copper), or nearby water main in West 7th Avenue (unknown composition).

RECOMMENDATIONS

We recommend periodic groundwater monitoring be conducted to verify the direction of the groundwater gradient, groundwater elevation, petroleum concentrations in groundwater, and extent/thickness of free phase petroleum product. If the gradient is consistently south, additional borings/wells may be needed across the street to the south.

Attempts should be made to remove the free product in MW2. Typical methods to remove free product are skimmers (within well or trench; with or without groundwater depression), groundwater extraction, vapor extraction, dual phase (vapor and liquid) extraction, or excavation. A down-well skimmer such as a Xitech system would require abovegrade equipment that may be difficult to use in the middle of the driveway. Groundwater and vapor extraction typically require moderately permeable materials. Because the free product appears to be mostly within the (presumably low permeability) clay glacial till, and because the product appears limited to the MW2 area, we recommend a pilot test be conducted to determine if periodic dual-phase extraction is feasible. A vacuum truck would be used for the one-day pilot test.

Should dual-phase extraction not prove feasible, or as an alternate, excavation of soil could be considered. The area bounded by the east sidewalk, south sidewalk, and the canopy (on the north) could be excavated. This area is about 16' by 55' (if 13' deep, about 423 cubic yards of soil in-place). Additional soil borings or other assessment could be done to attempt to better define the area proposed for excavation.

Future potential subsurface work at the site may encounter remaining petroleum contaminated soil. If encountered, excavated construction-derived petroleum contaminated soil may need to be taken to a permitted landfill or landfarm for disposal.

STANDARD OF CARE


Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and 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.

REMARKS


A description of the methods used during the project are attached in Appendix D. Soil samples obtained during our work will be retained in this office for a period of thirty days from the date of this report. They will then be discarded unless we are notified otherwise.

GeoTek Engineering and Testing Services, Inc. appreciates the opportunity to have been of service on this project. Please contact us if we can be of further assistance or if you have questions.

Respectfully submitted,


Gerald K. Zutz
Project Manager
PE/Remediator #5083

This report reviewed by:


Daniel R. Hanson
Senior Project Manager
PE/Remediator #4829

REFERENCES

Barari, A., Ground-Water Supply for the City of Mitchell, South Dakota, SD Geological Survey Special Report 42, 1966.

Christensen, C.M., Geology of Davison and Hanson Counties, South Dakota, SD Geological Survey Bulletin 33, 1989.

Hammond, Richard H., Sand and Gravel Resources in Davison County, South Dakota, South Dakota Geological Survey Information Pamphlet No. 24, 1982.

Hansen, Donald S., Water Resources of Hanson and Davison Counties, South Dakota, US Geological Survey Water Resources Investigation Report 83-4108, 1983.

Johnson, Warren F., & others, Soil Survey of Davison County, South Dakota, USDA Soil Conservation Service, 1974.

SD Department of Environment and Natural Resources, Public Water System Data Handbook, 2000.

US Geological Survey, Mitchell, South Dakota Quadrangle, 7.5 Minute Series Map, 1957, photorevised 1974.



TABLE 1
SOIL BORING PID READINGS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Depth (ft)	SB1	SB2	SB3	MW1	MW2	MW3	MW4
0 - 2	ND	ND	ND	ND	ND	ND	1
2 - 4 1/2	ND	ND	5	10	ND	ND	ND
4 1/2 - 7	ND	ND	5	65*	ND	ND	ND
7 - 9 1/2	ND	4*	25	45	82	ND	ND
9 1/2 - 12	ND	ND	120*	ND	118*	ND*	19*
12 - 14 1/2	ND*	ND	7	ND	30	ND	7
14 1/2 - 17	ND	ND	4	ND	--	ND	2

Notes: All readings are in parts per million (ppm) total organic vapors.

ND = Not detected (<1.0 ppm).

* = Sample submitted for laboratory analysis.

Soil vapor headspace analysis was performed at the site with a photoionization detector (PID) calibrated to a benzene standard.

See Figure 2 for soil boring locations.

TABLE 2
SOIL SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Test Boring	Depth (feet)	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	Total Hydrocarbons as Gasoline
SB1	12-14.5	<0.20	<0.20	<0.20	<0.20	<0.20	<10.00
SB2	7-9.5	<0.20	<0.20	<0.20	<0.20	<0.20	<10.00
SB3	9.5-12	0.90	5.46	4.86	14.30	<0.20	175.00
MW1	4.5-7	<0.20	<0.20	<0.20	<0.20	<0.20	<10.00
MW2	9.5-12	2.37	3.22	27.70	112.00	<0.20	1673.00
MW3	9.5-12	<0.20	<0.20	<0.20	<0.20	<0.20	<10.00
MW4	9.5-12	<0.20	0.39	0.29	2.67	<0.20	93.50
Tier 1 action levels		0.2	15	10	300	25	--

Notes:
All values in parts per million (ppm).
Values in **bold** print exceed Tier 1 action levels.
Laboratory reports attached.
See Figure 2 for soil boring locations.

TABLE 3
MONITORING WELL WATER LEVELS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Sampling Location	Top-of-Riser* Elevation(ft)	Date	Depth To Product(ft)	Depth to Groundwater(ft)	Product Thickness(ft)	Groundwater Elevation (ft)
MW1	98.52	4-30-03	--	9.30	--	89.22
		7-28-03	--	9.12	--	89.40
MW2	97.66	4-30-03	8.68	9.31	0.63	88.35
		7-28-03	8.42	9.08	0.66	89.24
MW3	97.28	7-28-03	--	8.32	--	88.96
MW4	98.31	7-28-03	--	9.32	--	88.99
MW5	97.12	7-28-03	--	8.36	--	88.76

Notes:

Top of riser elevations referenced the floor of the building (arbitrary datum).
See Figure 4 for well locations and estimated groundwater contour map.

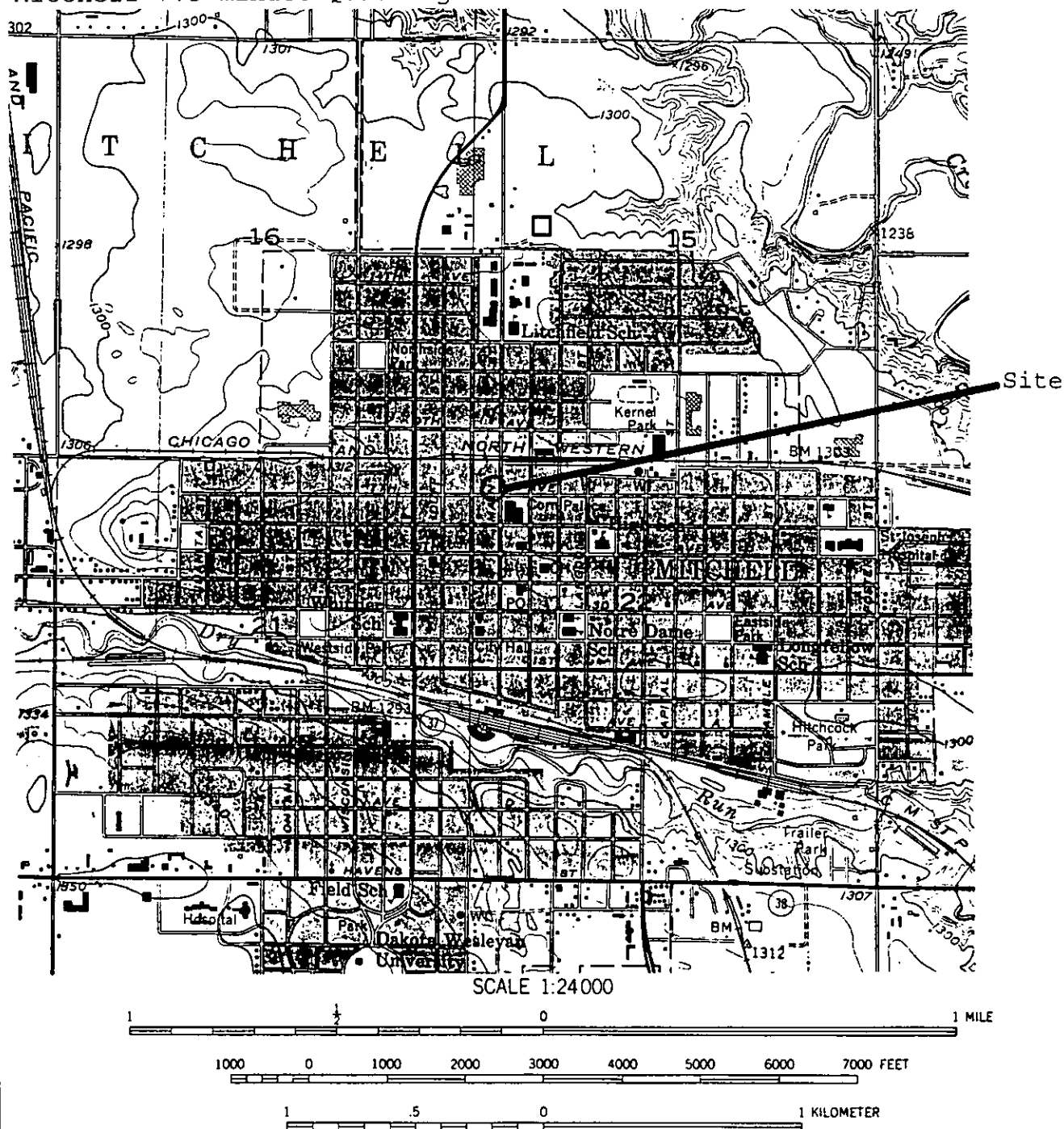
TABLE 4
GROUNDWATER SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Well Number	Date	Benzene	Toluene	Ethyl- Benzene	Xylenes	MTBE	TPH as Gasoline
MW1	4-30-03	0.010	<0.002	<0.002	<0.005	<0.002	<0.100
MW3	7-28-03	<0.002	<0.002	<0.002	<0.005	0.012	<0.100
MW4	7-28-03	<0.002	<0.002	<0.002	<0.005	<0.002	<0.100
MW5	7-28-03	3.70	7.57	0.20	2.89	<0.02	33.00
<hr/>							
SDGWQS		0.005	1	0.7	10	--	10

Notes: All values in parts per million (ppm).
SDGWQS: South Dakota Groundwater Quality Standards (ARSD 74:03:15:03).
Values in **bold** print exceed SDGWQS.
Laboratory reports attached.
See Figure 2 for well locations.



From U.S. Geological Survey
Mitchell 7.5 minute Quadrangle



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

FIGURE 1
TOPOGRAPHIC MAP
CASEY'S GENERAL STORES INC.
701 NORTH MAIN STREET
MITCHELL, SOUTH DAKOTA

PROJECT #: 02-A83

DRAWN BY:

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.



GEOTEK ENGINEERING &
TESTING SERVICES, INC.



SCALE: 1"=120'

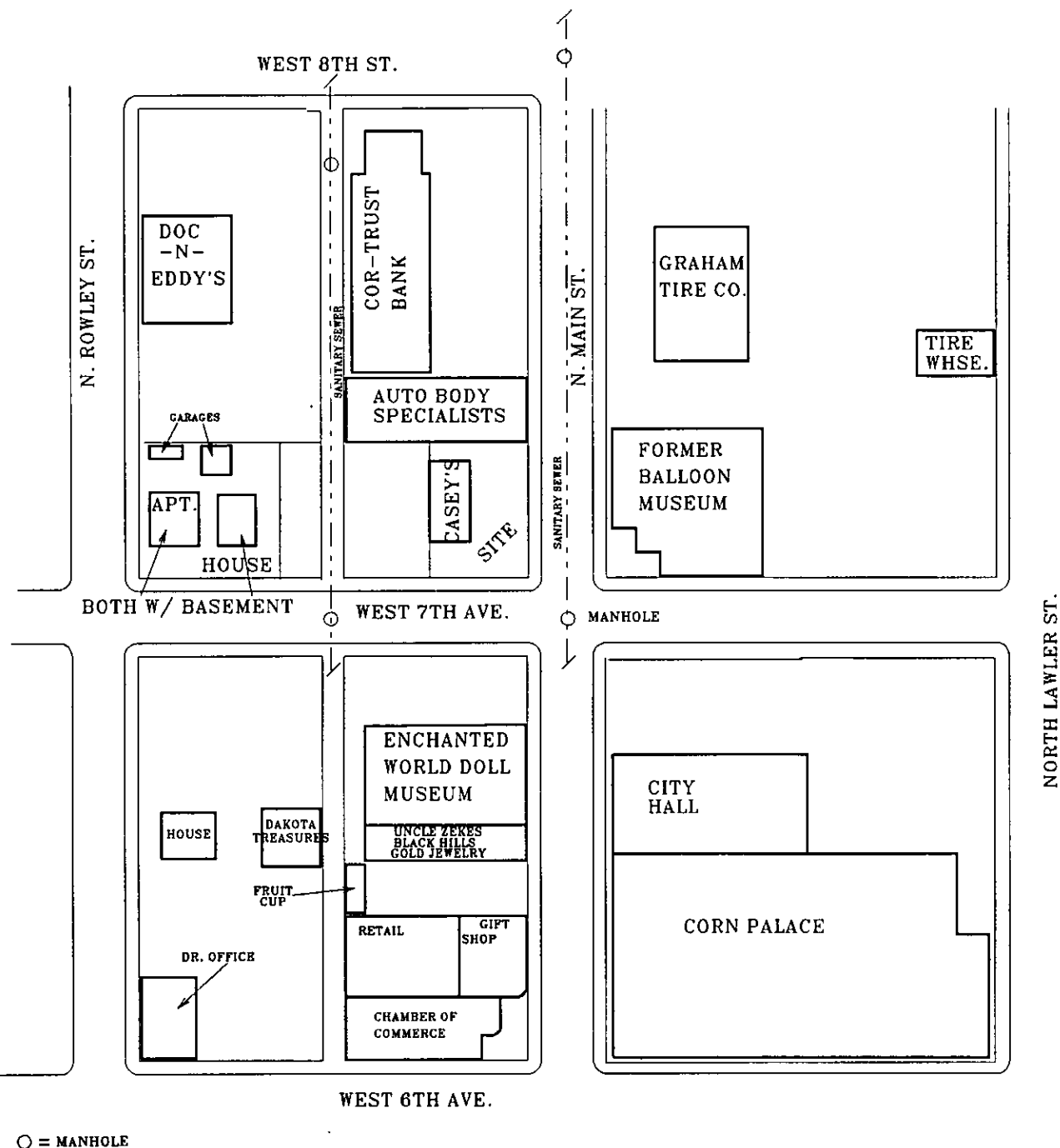


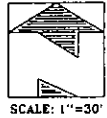
FIGURE 3
VICINITY MAP & SANITARY SEWER LINES
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD.

PROJECT #: 02-A83C

DRAWN BY: KK

CHECKED BY: *[Signature]*

GEOTEK ENGINEERING &
TESTING SERVICES, INC.



SCALE: 1"=30'

LEGEND

- MONITORING WELL
- ⊙ SOIL BORING

AUTO BODY SPECIALTIES BLDG.
(NO BASEMENT)

PROPERTY LINE

VENTS

CONCRETE

SB1

89.40'

CANOPY

CASEY'S
BUILDING
(NO BASEMENT)

89.20'

MW1
89.40'

ST'S & PIPING

89.00'
ASPHALT
PARKING LOT

CONCRETE

MW4
88.99'

MW2
89.24'

DISPENSER PUMP

MW3
88.96'

WATER

SIGN

SIDEWALK

88.80'

GRASS

CONCRETE

GRASS

ASPHALT

SB3
MW5
88.76'

WEST 7TH AVENUE

NORTH MAIN STREET

16' ASPHALT ALLEY

WATER LEVELS OF 07/28/03

FIGURE 4

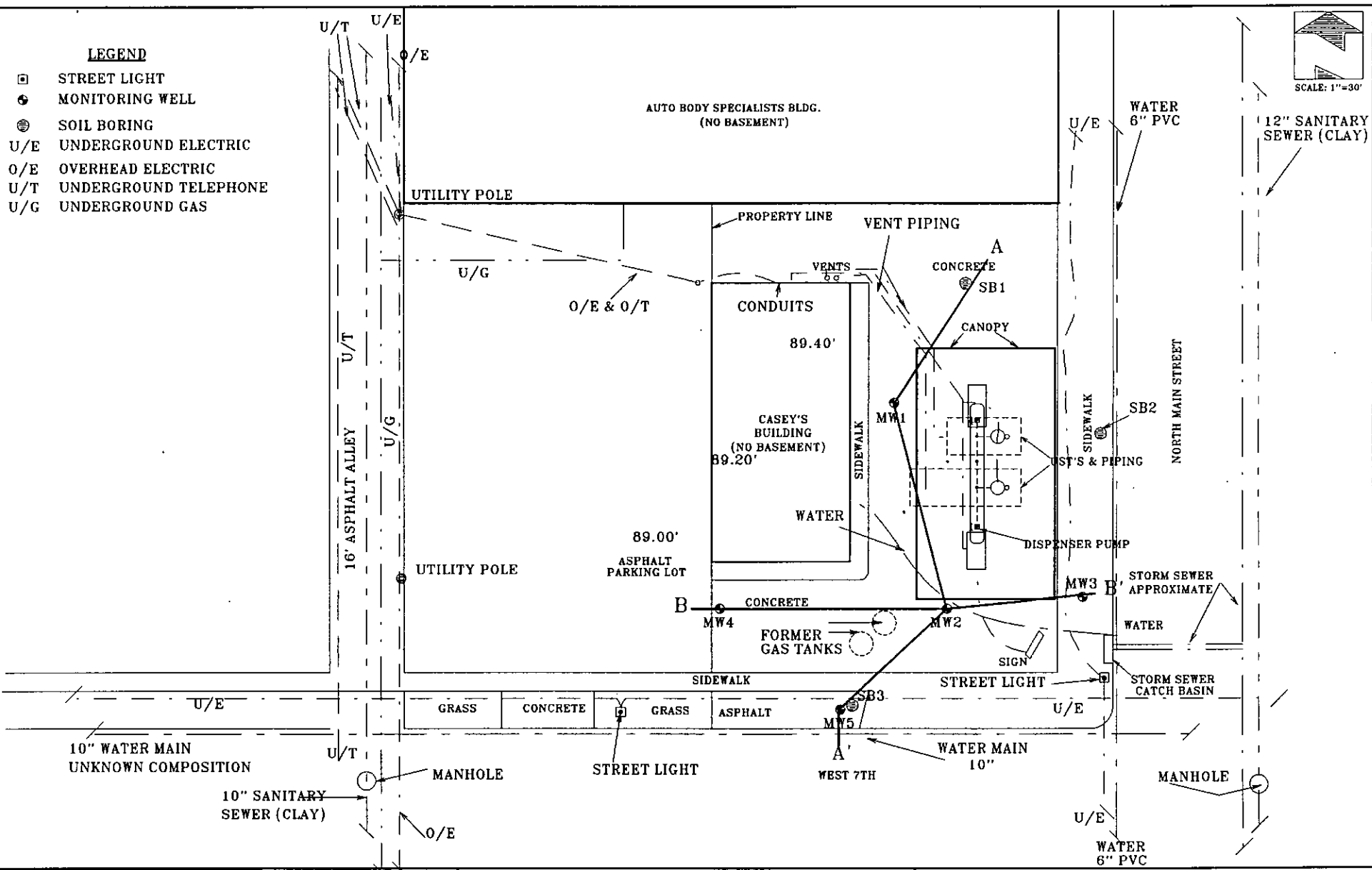
SITE MAP
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD.

PROJECT #: 02-A83

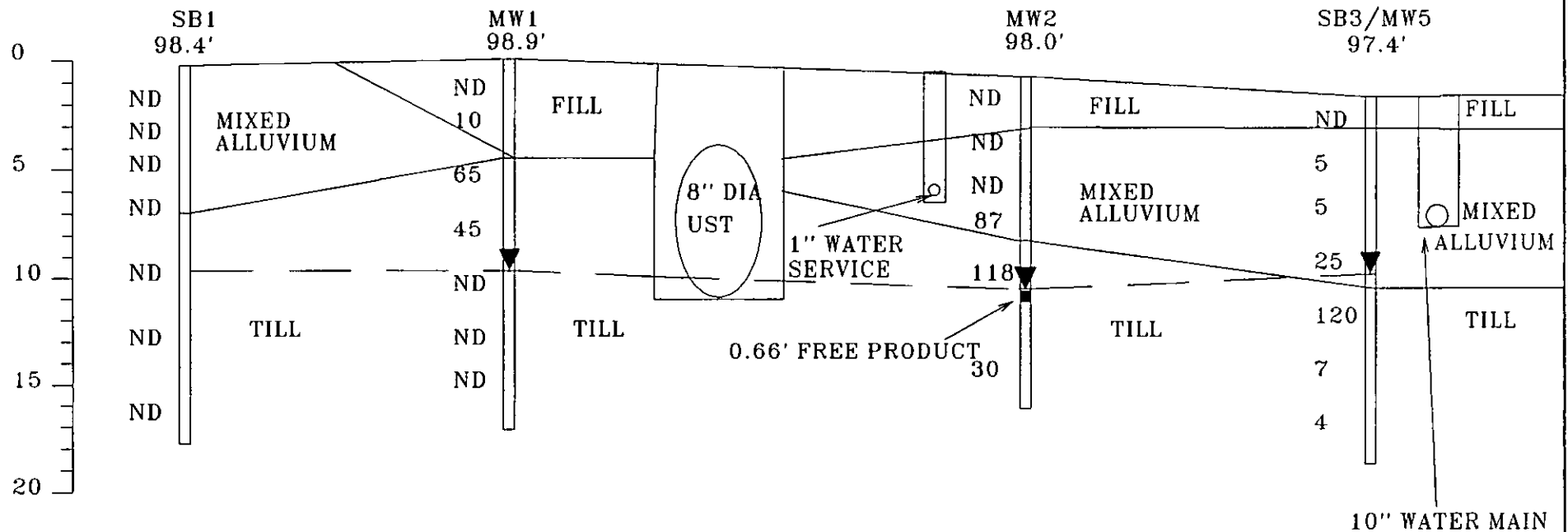
DRAWN BY: KK

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.



CROSS SECTION A - A'



HORIZONTAL SCALE 1" = 15'
 WATER LEVELS OF 07/28/03
 PID READINGS ON SIDE OF BORINGS

FIGURE 6
 CROSS SECTION A - A'
 CASEY'S GENERAL STORES INC.
 701 N. MAIN ST.
 MITCHELL, SD.

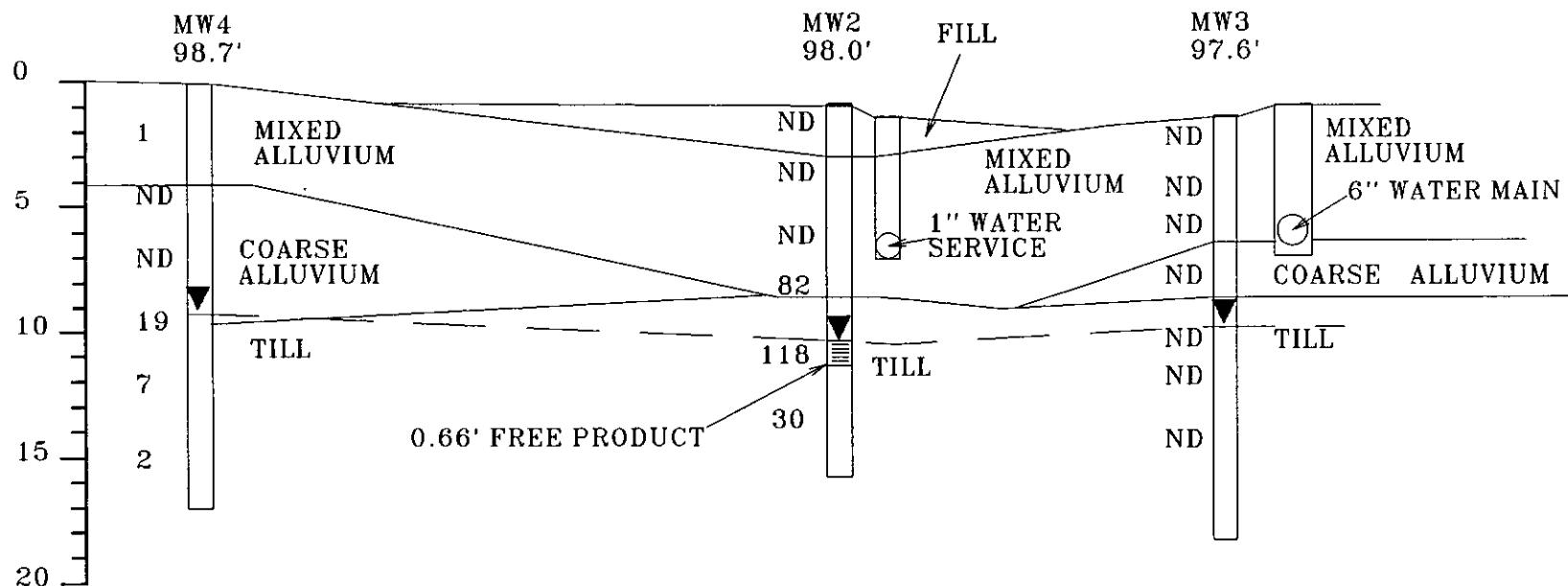
PROJECT #: 02-A83

DRAWN BY: K.K

CHECKED BY:

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CROSS SECTION B - B'



HORIZONTAL SCALE 1" = 10'
 WATER LEVELS OF 07/28/03
 PID READINGS ON SIDE OF BORINGS

FIGURE 7
 CROSS SECTION B - B'
 CASEY'S GENERAL STORES INC.
 701 N. MAIN ST.
 MITCHELL, SD.

PROJECT #: 02-A83

DRAWN BY: K.K

CHECKED BY: *[Signature]*

GEOTEK ENGINEERING &
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APPENDIX A





GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57104
605-335-2512 FAX 605-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-AB3 BORING WELL #: SB1
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 90.4' TOP OF RISER (TOR) ELEVATION: _____

GENERALIZED WELL
CROSS-SECTION

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
2	SANDY CLAY, brownish gray, a layer of concrete at the surface (CL)	MIXED ALLUVIUM	1	AUGER	ND	
	SILTY CLAY, medium grained, brown, moist (SM)		2	SB	ND	
4.5	SILTY SAND, medium grained, tan and brown, moist (SM)		3	SB	ND	
6.5	LEAN CLAY, a little gravel, brown mottled, a few lenses of silty clay above 9' and a few laminations of sand (CL)	TILL	4	SB	ND	
			5	SB	ND	
			6	SB	ND	
			7	SB	ND	
17	END OF BORING					

WATER LEVEL MEASUREMENTS				
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER
		SURFACE	TOR	
4-16-03	10:00	NONE		

DATE STARTED: 4-16-03
DATE FINISHED: 4-16-03 @ 10:00
METHOD OF DRILLING: 3 1/4" HSA: 0-14.5'
CREW CHIEF: HAGEDORN



GEOTEK ENGINEERING
& TESTING SERVICES, INC.
900 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57101
605-335-5512 FAX 605-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A83 BORING\WELL #: SB2							GENERALIZED WELL CROSS-SECTION
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD							
SURFACE ELEVATION: 97.5' TOP OF RISER (TOR) ELEVATION: _____							
DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL	
			NO	TYPE			
	FILL, mostly silty sand, a little gravel, brownish gray, a layer of concrete at the surface	FILL	1	AUGER	ND		
			2	SB	ND		
4	SILTY SAND, medium grained, tan and brown, moist (SM)	MIXED ALLUVIUM	3	SB	ND		
7	SILTY CLAY, brown mottled (CL)	FINE ALLUVIUM	4	SB	4		
9	LEAN CLAY, a little gravel, brown mottled (CL)	TILL	5	SB	ND		
12	LEAN CLAY, a little gravel, brownish gray and brown mottled (CL)		6	SB	ND		
			7	SB	ND		
17	END OF BORING						

WATER LEVEL MEASUREMENTS					DATE STARTED: 4-16-03
DATE	TIME	DEPTH BELOW		ELEVATION	
		SURFACE	TOR	OF WATER	
4-16-03	10:05	NONE			DATE FINISHED: 4-16-03 @ 10:05
					METHOD OF DRILLING: 3 1/4" HSA: 0-14.5'
					CREW CHIEF: HAGEDORN



GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 EAST 50TH STREET NORTH
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ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A03 BORING WELL #: SB3
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 97.5' TOP OF RISER (TOR) ELEVATION: _____

GENERALIZED WELL
CROSS-SECTION

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
1.5	FILL, mostly clay, a little gravel, brown, a layer of asphalt at the surface	FILL	1	AUGER	ND	
	SILTY SAND, medium grained, brown, moist (SM)	MIXED ALLUVIUM	2	SB	5	
			3	SB	5	
6.5	SILTY CLAY, brown mottled (CL)		4	SB	25	
9	LEAN CLAY, brown and gray, a lens of black sand at about 10 1/2' (CL)	TILL	5	SB	120	
12.5	LEAN CLAY, a little gravel, brownish gray and brown mottled (CL)		6	SB	7	
			7	SB	4	
17	END OF BORING					

WATER LEVEL MEASUREMENTS					DATE STARTED: <u>4-16-03</u>		
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER	DATE FINISHED: <u>4-16-03</u>	@ <u>3:50</u>	
		SURFACE	TOR				
4-16-03	3:50	NONE			METHOD OF DRILLING: <u>3 1/4" HSA; 0-14.5'</u>		
					CREW CHIEF: <u>HAGEDORN</u>		



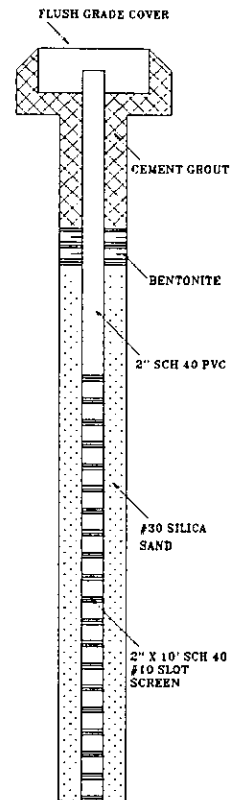
GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57104
605-336-5512 FAX 605-336-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A03 BORING WELL #: MW1
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 98.9' TOP OF RISER (TOR) ELEVATION: 98.52'

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
	FILL, mostly silty sand, a little gravel, brown and brownish gray, a layer of concrete at the surface	FILL	1	AUGER	ND	
			2	SB	10	
4.5	LEAN CLAY, a little gravel, brown mottled, a few lenses of sand and silty clay (CL)	TILL	3	SB	65	
			4	SB	45	
			5	SB	ND	
			6	SB	ND	
			7	SB	ND	
17	END OF BORING					

GENERALIZED WELL CROSS-SECTION



WATER LEVEL MEASUREMENTS					DATE STARTED: <u>4-16-03</u>		
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER	DATE FINISHED: <u>4-16-03</u>	@ <u>10:55</u>	
		SURFACE	TOR				
4-16-03	10:55	NONE	NONE	NONE	METHOD OF DRILLING: <u>3 1/4" HSA: 0-17'</u>		
4-30-03	12:20	--	9.30	89.22'	CREW CHIEF: <u>HAGEDORN</u>		



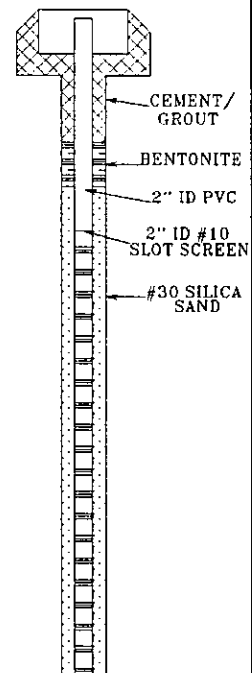
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SIOUX FALLS, SOUTH DAKOTA 57104
605-335-5512 FAX 605-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A83 BORING WELL #: MW2
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 98.0' TOP OF RISER (TOR) ELEVATION: 97.66'

GENERALIZED WELL CROSS-SECTION

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
2	FILL, mostly clay, trace of gravel, brown and dark brown, a layer of concrete at the surface	FILL	1	AUGER	ND	
	SILTY SAND, medium grained, brown, moist, a few lenses of clay below 6' (SM)	MIXED ALLUVIUM	2	SB	ND	
			3	SB	ND	
7.5	LEAN CLAY, a little gravel, gray and black, a few lenses of sand (CL)	TILL	4	SB	82	
			5	SB	118	
12.5	LEAN CLAY, a little gravel, brown mottled, a few lenses of sand (CL)		6	SB	30	
15	END OF BORING					



WATER LEVEL MEASUREMENTS				
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER
		SURFACE	TOR	
4-16-03	12:05	NONE	NONE	NONE
4-30-03	12:35	--	0.68'	88.98'

DATE STARTED: 4-16-03
DATE FINISHED: 4-16-03 @ 12:05
METHOD OF DRILLING: 3 1/4\" HSA: 0-15'
CREW CHIEF: HAGEDORN



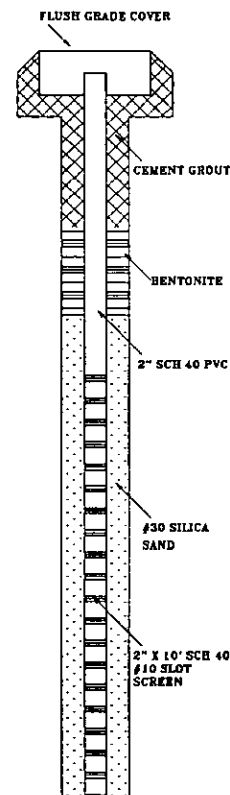
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909 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57104
605-335-5512 FAX 605-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A83 BORING\WELL #: MW3
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 97.8 TOP OF RISER (TOR) ELEVATION: 97.28

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
2	SILTY SAND, a little gravel, brown, a layer of concrete at the surface (SM)	MIXED ALLUVIUM	1	AUGER	ND	
	SANDY CLAY, a little gravel, brown (CL)		2	SB	ND	
			3	SB	ND	
5 1/2		COARSE ALLUVIUM	4	SB	ND	
7	SAND, medium grained, a little gravel, brown (SP)		5	SB	ND	
	LEAN CLAY, a little gravel, brown and gray mottled (CL)	TILL	6	SB	ND	
			7	SB	ND	
			8	SB	ND	
17	END OF BORING					

GENERALIZED WELL CROSS-SECTION



WATER LEVEL MEASUREMENTS					DATE STARTED: 07/17/03		
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER	DATE FINISHED: 07/17/03	@ 11:00	
		SURFACE	TOR				
07/28/03	12:35		8.32	88.96	METHOD OF DRILLING: 3 1/4" HSA-0-17'		
					CREW CHIEF: ROY HANSON		



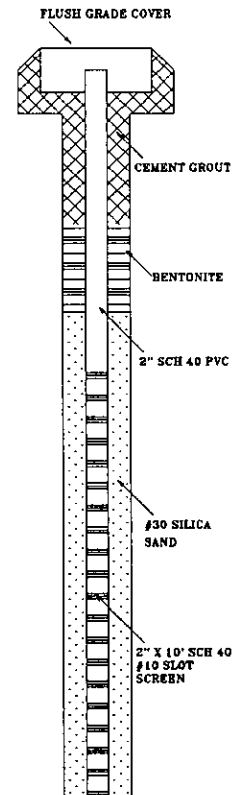
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& TESTING SERVICES, INC.
909 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57104
605-335-5512 FAX 605-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A03 BORING\WELL #: MW4
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 98.7 TOP OF RISER (TOR) ELEVATION: 98.31

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
2	SILTY SAND, a little gravel, brown, a layer of concrete at the surface (SM)	MIXED ALLUVIUM	1	AUGER	1	
4	SILTY SAND, medium grained, brown (SM)		2	SB	ND	
9 1/2	SAND, medium grained, a little gravel, brown (SP)	COARSE ALLUVIUM	3	SB	ND	
			4	SB	ND	
17	LEAN CLAY, a little gravel, brown mottled, a few lenses of silty clay above 9' (CL)	TILL	5	SB	10	
			6	SB	7	
			7	SB	2	
	END OF BORING					

GENERALIZED WELL CROSS-SECTION



WATER LEVEL MEASUREMENTS				DATE STARTED: 07/17/03	
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER	
		SURFACE	TOR		
07/28/03	12:55		9.32	88.99	
				DATE FINISHED: 07/17/03 @ 1:15	
				METHOD OF DRILLING: 3 1/4\"/>	
				CREW CHIEF: ROY HANSON	



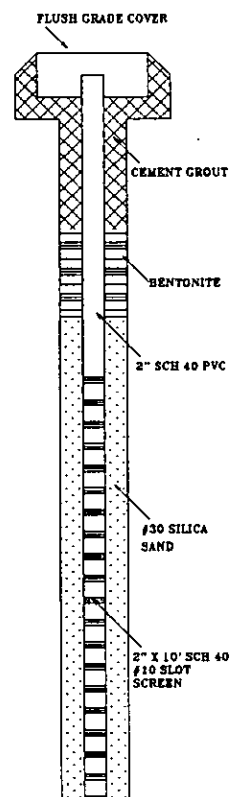
GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57104
605-335-5512 FAX 605-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A83 BORING\WELL #: MW5
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 97.4 TOP OF RISER (TOR) ELEVATION: 97.12

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
	SEE SB3	NO SAMPLES				
17	END OF BORING					

GENERALIZED WELL CROSS-SECTION



WATER LEVEL MEASUREMENTS

DATE	TIME	DEPTH BELOW		ELEVATION OF WATER
		SURFACE	TOR	
07/28/03	1:15		8.36	88.76

DATE STARTED: 07/17/03
DATE FINISHED: 07/17/03 @ 1:20
METHOD OF DRILLING: 3 1/4" HSA: 0-17"
CREW CHIEF: ROY HANSON

APPENDIX B



REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 17721

PROJECT:

DATE: April 28, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: April 16, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: April 17, 2003

PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
SB-1 12-14.5	1432-03					
	4/22/2003	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
SB-2 7-9.5	1433-03					
	4/22/2003	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
SB-3 9.5-12	1434-03					
	4/22/2003	EPA 8020	Benzene	0.90	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	5.46	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	4.86	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	14.30	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	175.00	mg/kg	10 mg/kg

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 17721

PROJECT:

DATE: April 28, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: April 16, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: April 17, 2003

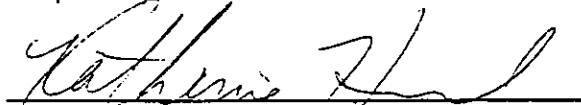
PHONE:

SAMPLER: Jerry Zutz 605-335-5512

Site	Lab ID#	Method	Compound Analyzed	Test Results	Units	Method Detection Limit
MW-1 4.5-7	1435-03					
	4/22/2003	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
MW-2 9.5-12	1436-03					
	4/22/2003	EPA 8020	Benzene	2.37	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	3.22	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	27.70	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	112.00	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	1673.00	mg/kg	10 mg/kg

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor



GEOTEK ENGINEERING & TESTING SERVICES, INC.

909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773

CHAIN OF CUSTODY RECORD Analytical Request

LAB: Geotek

GEOTEK PROJECT NAME Casey's General Stores Inc Geotek Project # 02-A83

Address 701 N. Main St
Mitchell, SD

Geotek Project Manager JRZ

P.O. #/Billing Reference _____

Bill To _____

TRANSMITTAL OF RESULTS

Report To _____

Fax? _____

Express Mail? _____

Standard Mail? _____

Sampled by (PRINT) JERRY ZUTZ Phone# _____

Sampler Signature [Signature] Date Sampled 4-16-03

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY METHODS (State Regulatory Agency)	ANALYSIS REQUESTED										Speed of Analysis No. days if other than standard turnaround	Remarks
						BTEX/MTBE	TH as Gasoline	Naphthalene	TH as Fuel Oil/Diesel	TH as Waste Oil	TDS/SS						
1432	SB1 12-14 1/2	Soil	1	ND	SD DENR	X	X										
1433	SB2 7-9 1/2		1	4		X	X										
1434	SB3 9 1/2-12		1	120		X	X										
1435	MW1 4 1/2-7		1	65		X	X										
1436	MW2 9 1/2-12	✓	1	118	✓	X	X										

Relinquished by Sampler: (Signature) <u>[Signature]</u>	DATE/TIME <u>4-17-03 8:30</u>	Received by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME <u>4-17-03 8:30</u>	Method of Shipment: <u>Hand Carry</u>
Delivered by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME <u>4-17-03 8:30</u>	Received by Laboratory: (Signature) <u>[Signature]</u>	DATE/TIME <u>4-17-03 8:30</u>	

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

REPORT OF ANALYTICAL RESULTS

PROJECT # : 02-A83-3

CHAIN OF CUSTODY # 17813

PROJECT:

DATE: July 23, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: July 17, 2003

Casey's General Stores, Inc.
PO Box 3001

DATE RECEIVED: July 17, 2003

Ankeny, IA 50021

PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW-3 9.5-12	1873-03					
	7/21/2003	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	7/21/2003	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	7/21/2003	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	7/21/2003	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	7/21/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	7/21/2003	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
MW-4 9.5-12	1874-03					
	7/21/2003	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	7/21/2003	EPA 8020	Toluene	0.39	mg/kg	0.2 mg/kg
	7/21/2003	EPA 8020	Ethylbenzene	0.29	mg/kg	0.2 mg/kg
	7/21/2003	EPA 8020	Xylenes	2.67	mg/kg	0.2 mg/kg
	7/21/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	7/21/2003	California USGS	TPH as Gasoline	93.50	mg/kg	10 mg/kg

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor


**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

 909 East 50th Street North
 Sioux Falls, SD 57104
 Telephone (605) 335-5512 • Fax (605) 335-0773

CHAIN OF CUSTODY RECORD
 Analytical Request

 LAB: Geo Tek

 GEOTEK PROJECT NAME Casey's General Stores Inc

 Geotek Project # 02-A83
TRANSMITTAL OF RESULTS

 Address 701 N. Main St

 Geotek Project Manager JH Z

Report To _____

Mitchell, SD

P.O. #/Billing Reference _____

Fax? _____

Bill To _____

Express Mail? _____

Standard Mail? _____

 Sampled by (PRINT) JERRY ZUTZ Phone# _____

 Sampler Signature [Signature] Date Sampled 7-17-03

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY METHODS (State Regulatory Agency)	ANALYSIS REQUESTED										Speed of Analysis No. days if other than standard turnaround	Remarks
						BTEX/MTBE	TH as Gasoline	Naphthalene	TH as Fuel Oil/Diesel	TH as Waste Oil	TDS/TSS						
1873	MW3 9 1/2 - 12'	soil	1	ND	SD DENR	X	X										
1874	MW4 9 1/2 - 12'	"	1	19	"	X	X										

Relinquished by Sampler (Signature) <u>[Signature]</u>	DATE/TIME <u>7-17-03 4PM</u>	Received by Shipper: (Signature) _____	DATE/TIME _____	Method of Shipment: <u>Hand Carry</u>
Delivered by Shipper: (Signature) _____	DATE/TIME _____	Received by Laboratory: (Signature) <u>[Signature]</u>	DATE/TIME <u>7/17/03 15:55</u>	

LABORATORY: Was cooler received with Chain of Custody Seal intact? ____ Yes ____ No Initials _____

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 17785

PROJECT:

DATE: May 02, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: WATER

CLIENT:

DATE SAMPLED: April 30, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: May 01, 2003

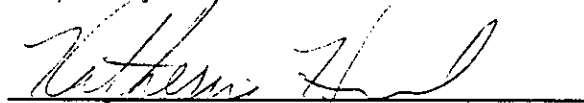
PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW #1	1538-03					
	5/1/2003	EPA 602 (modified)	Benzene	0.010	mg/L	0.002 mg/L
	5/1/2003	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	5/1/2003	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	5/1/2003	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	5/1/2003	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	5/1/2003	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor


**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

 909 East 50th Street North
 Sioux Falls, SD 57104

Telephone (605) 335-5512 • Fax (605) 335-0773

CHAIN OF CUSTODY RECORD
 Analytical Request

 LAB: Geotek

GEOTEK PROJECT NAME Cassey's General Store Geotek Project # 02-A83-3 **TRANSMITTAL OF RESULTS**
 Address 701 N. Main street Geotek Project Manager Jerry Zute Report To _____
Mitchell S. Dak P.O. #/Billing Reference _____ Fax? _____
 Bill To Geotek Express Mail? _____
 Standard Mail? _____

 Sampled by (PRINT) Red Phone# _____

 Sampler Signature [Signature] Date Sampled 4-30-03

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	ANALYSIS REQUESTED										Speed of Analysis No. days if other than standard turnaround	Remarks
					LABORATORY METHODS (State Regulatory Agency)	BTEX/MTBE	TH as Gasoline	Naphthalene	TH as Fuel Oil/Diesel	TH as Waste Oil	TOS/TSS					
1038	MW 1	H ₂ O	3va			X	X									

Relinquished by Sampler: (Signature) [Signature] DATE/TIME 5-1-03
 Delivered by Shipper: (Signature) [Signature] DATE/TIME 4-30-03

Received by Shipper: (Signature) _____ DATE/TIME _____ Method of Shipment: _____
 Received by Laboratory: (Signature) [Signature] DATE/TIME 5/1/03 13:42

 LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 17922

PROJECT:

DATE: August 05, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: WATER

CLIENT:

DATE SAMPLED: July 28, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: July 28, 2003

PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

Site	Lab ID#	Method	Compound Analyzed	Test Results	Units	Method Detection Limit
MW #3	1944-03					
	8/4/2003	EPA 602 (modified)	Benzene	<0.002	mg/L	0.002 mg/L
	8/4/2003	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	8/4/2003	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	8/4/2003	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	8/4/2003	EPA 602 (modified)	MTBE	0.012	mg/L	0.002 mg/L
	8/4/2003	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L
MW #4	1945-03					
	8/4/2003	EPA 602 (modified)	Benzene	<0.002	mg/L	0.002 mg/L
	8/4/2003	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	8/4/2003	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	8/4/2003	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	8/4/2003	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	8/4/2003	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L
MW #5	1946-03					
	8/1/2003	EPA 602 (modified)	Benzene	3.70	mg/L	0.02 mg/L
	8/1/2003	EPA 602 (modified)	Toluene	7.57	mg/L	0.02 mg/L
	8/1/2003	EPA 602 (modified)	Ethylbenzene	0.20	mg/L	0.02 mg/L
	8/1/2003	EPA 602 (modified)	Xylenes	2.89	mg/L	0.05 mg/L
	8/1/2003	EPA 602 (modified)	MTBE	<0.02	mg/L	0.02 mg/L
	8/1/2003	California USGS	TPH as Gasoline	33.00	mg/L	1 mg/L

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 17922

PROJECT:

DATE: August 05, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: WATER

CLIENT:

DATE SAMPLED: July 28, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

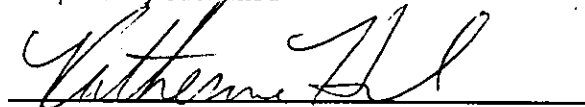
DATE RECEIVED: July 28, 2003

PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
Analysts: Katherine Howard and Jason Cook						

Respectfully submitted



Katherine Howard, Laboratory Supervisor


**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

909 East 50th Street North

Sioux Falls, SD 57104

Telephone (605) 335-5512 • Fax (605) 335-0773

CHAIN OF CUSTODY RECORD

Analytical Request

LAB: GeotekGEOTEK PROJECT NAME Casey's General StoreGeotek Project # 02-A83-3
TRANSMITTAL OF RESULTS
Address 701 N. Main StreetGeotek Project Manager Jerry Zutz

Report To _____

Fax? _____

Express Mail? _____

Standard Mail? _____

Sampled by (PRINT) Red Phone# _____Sampler Signature JH Th Date Sampled 7-28-03
ANAYSIS REQUESTED

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY METHODS (State Regulatory Agency)										Speed of Analysis No. days if other than standard turnaround	Remarks
					BTEX/MTBE	TH as Gasoline	Napthalene	TH as Fuel Oil/Diesel	TH as Waste Oil	TDS/TSS						
1944	mw 3	H ₂ O	300g		X	X										
1945	mw 4	X	X		X	X										Slight odor
1946	mw 5	X	X		X	X										Strong odor

Relinquished by Sampler: (Signature) JH ThDATE/TIME 7-28-03

Received by Shipper: (Signature) _____

DATE/TIME _____

Method of Shipment: _____

Delivered by Shipper: (Signature) _____

DATE/TIME _____

Received by Laboratory: (Signature) KathleenDATE/TIME 7-28-03 3:45LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

APPENDIX C



SOUTH DAKOTA DENR RBCA SITE CONCEPTUAL MODEL SHEET

SITE NAME	Casey's General Store	DATE COMPLETED	9-8-03	DENR SPILL #
SITE LOCATION	701 N. Main St, Mitchell, SD	COMPLETED BY	Jerry Zutz	2002.237

Step 1 – Baseline Exposure: Fill in Box (☐) to identify applicable sources, transport mechanisms, and receptors.

Step 2 – Remedial Measures: Fill in shut-off valves (☒) to indicate removal / remedial action, containment measure, or institutional controls to be used to “shut off” exposure pathway.

PRIMARY SOURCES	SECONDARY SOURCES	TRANSPORT MECHANISMS	EXPOSURE PATHWAY	POTENTIAL RECEPTORS
<input checked="" type="checkbox"/> Storage Tanks <input checked="" type="checkbox"/> Piping/ Pump Island <input checked="" type="checkbox"/> Handling <input type="checkbox"/> Transportation Accident <input type="checkbox"/> Vandalism <input type="checkbox"/> Transformer <input type="checkbox"/> Sump Waste <input type="checkbox"/> Drums <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Affected Surface Soil (< 3.2 ft depth) <input checked="" type="checkbox"/> Affected Subsurface Soil (> 3.2 ft depth) <input checked="" type="checkbox"/> Dissolved Ground Water Plume <input checked="" type="checkbox"/> Free Phase Product	<input type="checkbox"/> Surface Water Run off (see surface soil lookup table) Pavement <input checked="" type="checkbox"/> Volatilization and Enclosed Space Accumulation <input checked="" type="checkbox"/> Leaching and Ground water Transport <input checked="" type="checkbox"/> Mobile Free Product	<input type="checkbox"/> Surface Water Recreational Use/ Sensitive Habitat <input checked="" type="checkbox"/> Soil Inhalation, Ingestion, or Dermal Contact (see surface soil lookup table) <input checked="" type="checkbox"/> Utilities Soil in contact Impact to Water line (see lookup table for water lines) <input checked="" type="checkbox"/> Air Inhalation of Vapor (see indoor air lookup table) <input checked="" type="checkbox"/> Air Vapors in Underground utilities <input checked="" type="checkbox"/> Ground Water Potable Water Use (see Mcl) <input checked="" type="checkbox"/> Utilities Ground Water in contact Impact to Water Line (see lookup table for water lines)	<p>On-Site <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input checked="" type="checkbox"/> Construction worker</p> <p>On-Site <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial</p> <p>Off-Site <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial</p>

SB
2002.237

COPY

INTERIM TIER 2 REPORT
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA

GEOTEK #02-A83 DENR #2002.237 PRCF #

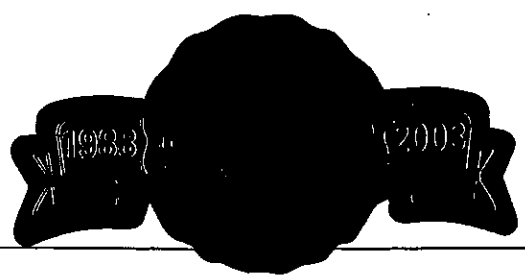


GeOTEK

GEOTEK ENGINEERING & TESTING SERVICES, INC.



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773



June 9, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-0030

Attn: Mr. Glenn Norgart

Subj: Interim Tier 2 Report
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237
PRCF #



Dear Mr. Norgart:

Introduction

This interim report provides the Tier 2 data collected to date.

The site is located at the northwest corner of the intersection of N. Main Street and W. 7th Avenue in the central part of Mitchell, Davison County, South Dakota (Figure 1). The site consists of a convenience store, a dispenser island, and two gasoline USTs (1-6000 gallon, and 1-10,000 gallon). The old dispensers and piping were removed, and new piping, dispensers, and a canopy installed in October 2002. A soil sample collected at the time had petroleum concentrations above the SD DENR Tier 1 Action Levels.

The January 22, 2003 DENR letter required that a Tier 2 Assessment be conducted. The February 6, 2003 amendment to the October 1, 2002 contract detailed planned Tier 2 Assessment activities. The March 27, 2003 PRCF letter reviewed and approved the contract amendment; the PRCF letter stated that "reimbursement for assessment will be limited to borings/wells installed to address a potential risk as indicated in the site conceptual model".

Background Information

We understand that recent PRCF policy is that monitoring wells are necessary to assess petroleum concentrations in groundwater only if "aquifer material" is present. We are not aware of a DENR or PRCF definition of aquifer material. We define aquifer material to mean sediments, if saturated, that could yield water to a supply well, such as clay with sand or silt lenses, silty clay, sandy clay, sand, gravel, etc.

A review was conducted of a nearby project (DENR #92.385 Livestock State Bank, 715 N. Main Street, located about 50' north of the site) to attempt to determine if "aquifer material" was present in the area subsurface. Of about 13 borings advanced for this project, eleven encountered sand, silty sand, and silty clay up to 17' deep, and two borings encountered fill soils (silty sand). Groundwater was measured to be about 8-12' deep at the time, with a gradient to the west. Therefore, based on nearby data, it is likely that "aquifer material" exists on-site.

Project Results

On April 16, 2003, five soil borings (SB1, SB2, SB3, MW1, MW2) were advanced at the locations on Figure 2, with two completed as groundwater monitoring wells. The boring logs are attached. Silty clay and silty sand were encountered above 9' depth. The deeper lean clay had some lenses of sand and silty clay. Depending upon their continuity and extent, sand and silty clay lenses in glacial clay till may or may not be considered aquifer material.

The borings and wells listed below were done to check for these potential receptors and possible transport mechanisms:

- SB1-adjacent building; vapors, groundwater transport.
- SB2-water/sewer mains; vapors, groundwater transport.
- SB3-water main; vapors, groundwater transport.
- MW1-site building; vapors, free product, groundwater transport.
- MW2-water service; vapors, groundwater transport.

PID readings are listed on Table 1. The soil lab data is listed on Table 2, and on the attached lab report. Soil from SB3 and MW2 had petroleum concentrations. Petroleum was not detected in soil from other borings.

On April 30, 2003, water level measurements were conducted. Free phase petroleum product was encountered in MW2. A trace of petroleum was detected in groundwater from MW1. The water level and product data is on Table 3. The water chemistry data is on Table 4 and the attached lab report.

A vapor survey was conducted on April 16, 2003 in the two nearest sewer manholes in the alley (west of the site) and in the two nearest sewer manholes in Main Street (adjacent to the east). Figure 3 shows the location of the manholes and sewer mains. Elevated PID readings (>1.0 ppm) were not detected in the manholes.

Discussion

The draft site conceptual model is attached. Potential risks from contaminated soil and groundwater identified so far are:

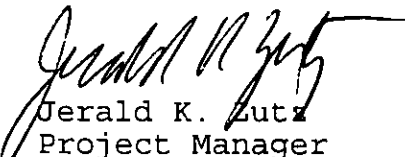
- soil ingestion/inhalation/dermal contact (construction worker),
- soil/groundwater in contact with water line(s),
- inhalation of vapor (site building occupants),
- vapors in underground utility lines,
- potable water use (potential downgradient wells),

Because of the discovery of free phase petroleum product in MW2, it appears that several additional soil borings and monitoring wells will be necessary to define the extent of free product. Initially, one well is planned west of MW2 (to help determine the extent in the apparent downgradient direction), one well is planned east of MW2 and one well is planned south of MW2 (to check if there is product near water mains). It is not known whether these wells will reasonably define the extent of free product or dissolved phase concentrations in groundwater. The additional soil borings and monitoring wells are planned to be conducted soon. The pending work may exceed the cost and scope of work estimated in the February 6, 2003 amendment. The additional work will be conducted at the same unit rates.

Remarks

This information is provided as a courtesy to Casey's, DENR, and PRCF, and no response is necessary unless there is disagreement with our approach. Please contact us if you have questions.

GeoTek Engineering & Testing Services, Inc.


Gerald K. Zutz
Project Manager
PE/Remediator #5083

cc: DENR, Sioux Falls, Mr. Scott Bickler
DENR, Pierre, Mr. Doug Miller
PRCF, Sioux Falls, Mr. Larry Headrick
PRCF, Pierre, Mr. John McVey

TABLE 1
SOIL BORING PID READINGS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Depth (ft)	SB1	SB2	SB3	MW1	MW2
0 - 2	ND	ND	ND	ND	ND
2 - 4 1/2	ND	ND	5	10	ND
4 1/2 - 7	ND	ND	5	65*	ND
7 - 9 1/2	ND	4*	25	45	82
9 1/2 - 12	ND	ND	120*	ND	118*
12 - 14 1/2	ND*	ND	7	ND	30
14 1/2 - 17	ND	ND	4	ND	--

Notes: All readings are in parts per million (ppm) total organic vapors.

ND = Not detected (<1.0 ppm).

* = Sample submitted for laboratory analysis.

Soil vapor headspace analysis was performed at the site with a photoionization detector (PID) calibrated to a benzene standard. See Figure 2 for soil boring locations.

TABLE 2
SOIL SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Test Boring	Depth (feet)	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	Total Hydrocarbons as Gasoline
SB1	12-14.5	<0.20	<0.20	<0.20	<0.20	<0.20	<10.00
SB2	7-9.5	<0.20	<0.20	<0.20	<0.20	<0.20	<10.00
SB3	9.5-12	0.90	5.46	4.86	14.30	<0.20	175.00
MW1	4.5-7	<0.20	<0.20	<0.20	<0.20	<0.20	<10.00
MW2	9.5-12	2.37	3.22	27.70	112.00	<0.20	1673.00
Tier 1 action levels		0.2	15	10	300	25	--

Notes:
All values in parts per million (ppm).
Values in **bold** print exceed Tier 1 action levels.
Laboratory report attached.
See Figure 2 for soil boring locations.

TABLE 3
 MONITORING WELL WATER LEVELS
 CASEY'S GENERAL STORE
 701 N. MAIN STREET
 MITCHELL, SOUTH DAKOTA
 GEOTEK #02-A83

<u>Sampling Location</u>	<u>Top-of-Riser* Elevation(ft)</u>	<u>Date</u>	<u>Depth To Product(ft)</u>	<u>Depth to Groundwater(ft)</u>	<u>Product Thickness(ft)</u>	<u>Groundwater Elevation (ft)</u>
MW1	98.52	4-30-03	--	9.30	--	89.22
MW2	97.66	4-30-03	8.68	9.31	0.63	88.35

Notes:

Top of riser elevations referenced the floor of the building (arbitrary datum).
 See Figure 2 for well locations.

TABLE 4
GROUNDWATER SAMPLE ANALYTICAL DATA
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Well Number	Date	Benzene	Toluene	Ethyl- Benzene	Xylenes	MTBE	TPH as Gasoline
MW1	4-30-03	0.010	<0.002	<0.002	<0.005	<0.002	<0.100
SDGWQS		0.005	1	0.7	10	--	10

Notes: All values in parts per million (ppm).

SDGWQS: South Dakota Groundwater Quality Standards (ARSD 74:03:15:03).

Values in **bold** print exceed SDGWQS.

Laboratory report attached.

See Figure 2 for well locations.



From U.S. Geological Survey
Mitchell 7.5 minute Quadrangle

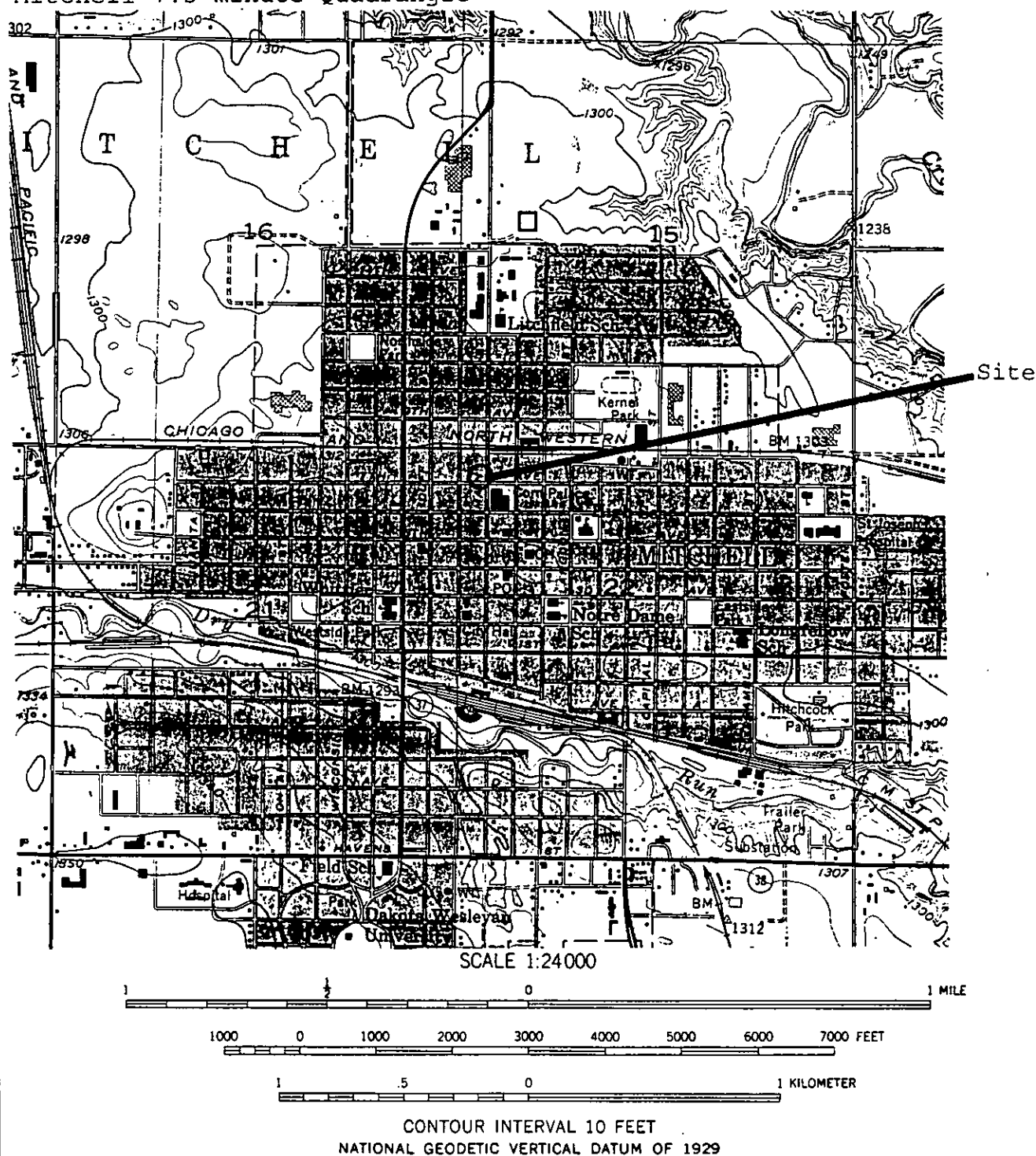


FIGURE 1
TOPOGRAPHIC MAP
CASEY'S GENERAL STORES INC.
701 NORTH MAIN STREET
MITCHELL, SOUTH DAKOTA

PROJECT #: 02-A83

DRAWN BY: CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.



SCALE: 1"=120'

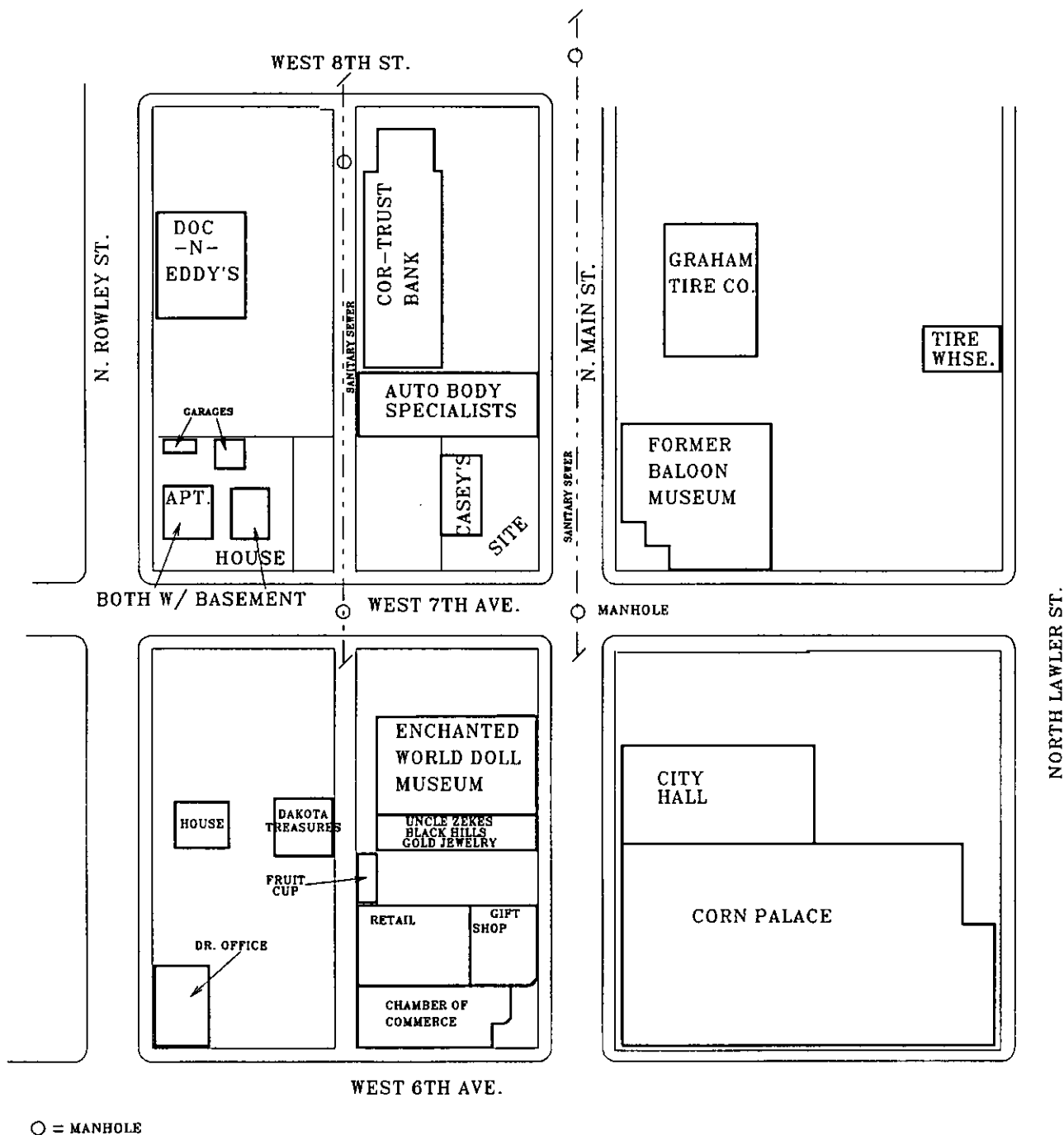


FIGURE 3
VICINITY MAP & SANITARY SEWER LINES
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD.

PROJECT #: 02-A83C

DRAWN BY: KK

CHECKED BY: *[Signature]*

GEOTEK ENGINEERING &
TESTING SERVICES, INC.



JOB #: 02-A83 BORING\WELL #: SB1					GENERALIZED WELL CROSS-SECTION	
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD						
SURFACE ELEVATION: 98.4' TOP OF RISER (TOR) ELEVATION: _____						
DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
2 4.5	SANDY CLAY, brownish gray, a layer of concrete at the surface (CL)	MIXED ALLUVIUM	1	AUGER	ND	
	SILTY CLAY, medium grained, brown, moist (SM)		2	SB	ND	
	SILTY SAND, medium grained, tan and brown, moist (SM)		3	SB	ND	
6.5	LEAN CLAY, a little gravel, brown mottled, a few lenses of silty clay above 9' and a few laminations of sand (CL)	TILL	4	SB	ND	
			5	SB	ND	
			6	SB	ND	
			7	SB	ND	
17	END OF BORING					

WATER LEVEL MEASUREMENTS					DATE STARTED: 4-16-03	
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER	DATE FINISHED: 4-16-03	@ 10:00
		SURFACE	TOR			
4-16-03	10:00	NONE				

METHOD OF DRILLING: 3 1/4" HSA: 0-14.5'

CREW CHIEF: HAGEDORN

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

[illegible]



GEOTEK ENGINEERING
& TESTING SERVICES, INC.
808 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57104
805-335-5512 FAX 805-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A83 BORING\WELL #: SB3

PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD

SURFACE ELEVATION: 97.5' TOP OF RISER (TOR) ELEVATION:

GENERALIZED WELL
CROSS-SECTION

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
1.3	FILL, mostly clay, a little gravel, brown, a layer of asphalt at the surface	FILL	1	AUGER	ND	
	SILTY SAND, medium grained, brown, moist (SM)	MIXED ALLUVIUM	2	SB	5	
			3	SB	5	
6.5	SILTY CLAY, brown mottled (CL)		4	SB	25	
9	LEAN CLAY, brown and gray, a lens of black sand at about 10 1/2' (CL)	TILL	5	SB	120	
12.5	LEAN CLAY, a little gravel, brownish gray and brown mottled (CL)		6	SB	7	
			7	SB	4	
17	END OF BORING					

WATER LEVEL MEASUREMENTS

DATE	TIME	DEPTH BELOW		ELEVATION OF WATER
		SURFACE	TOR	
4-16-03	3:50	NONE		

DATE STARTED: 4-16-03

DATE FINISHED: 4-16-03 @ 3:50

METHOD OF DRILLING: 3 1/4" HSA: 0-14.5'

CREW CHIEF: HAGEDORN



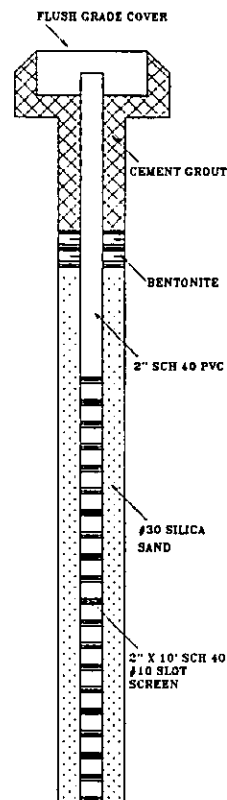
GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57104
605-335-5512 FAX 605-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A83 BORING\WELL #: MW1
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 98.9' TOP OF RISER (TOR) ELEVATION: 98.52'

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
	FILL, mostly silty sand, a little gravel, brown and brownish gray, a layer of concrete at the surface	FILL	1	AUGER	ND	
			2	SB	10	
4.5	LEAN CLAY, a little gravel, brown mottled, a few lenses of sand and silty clay (CL)	TILL	3	SB	65	
			4	SB	45	
			5	SB	ND	
			6	SB	ND	
			7	SB	ND	
17	END OF BORING					

GENERALIZED WELL CROSS-SECTION



WATER LEVEL MEASUREMENTS					DATE STARTED: 4-16-03		
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER	DATE FINISHED: 4-16-03	@ 10:55	
		SURFACE	TOR				
4-16-03	10:55	NONE	NONE	NONE	METHOD OF DRILLING: 3 1/4" HSA: 0-17'		
4-30-03	12:20	--	9.30	89.22'	CREW CHIEF: HAGEDORN		



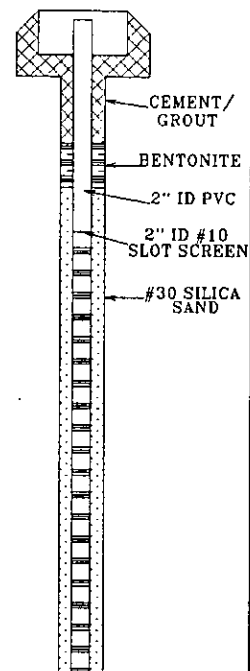
GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 EAST 50TH STREET NORTH
SIOUX FALLS, SOUTH DAKOTA 57104
805-335-5512 FAX 805-335-0773

ENVIRONMENTAL SOIL BORING LOG/ WELL CONSTRUCTION INFORMATION

JOB #: 02-A83 BORING\WELL #: MW2
PROJECT: CASEY'S, 701 N. MAIN STREET, MITCHELL, SD
SURFACE ELEVATION: 98.0' TOP OF RISER (TOR) ELEVATION: 97.66'

GENERALIZED WELL CROSS-SECTION

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE		PID DATA (PPM)	WL
			NO	TYPE		
2	FILL, mostly clay, trace of gravel, brown and dark brown, a layer of concrete at the surface	FILL	1	AUGER	ND	
	SILTY SAND, medium grained, brown, moist, a few lenses of clay below 6' (SM)	MIXED ALLUVIUM	2	SB	ND	
			3	SB	ND	
7.5	LEAN CLAY, a little gravel, gray and black, a few lenses of sand (CL)	TILL	4	SB	82	
			5	SB	118	
12.5	LEAN CLAY, a little gravel, brown mottled, a few lenses of sand (CL)		6	SB	30	
15	END OF BORING					



WATER LEVEL MEASUREMENTS				
DATE	TIME	DEPTH BELOW		ELEVATION OF WATER
		SURFACE	TOR	
4-16-03	12:05	NONE	NONE	NONE
4-30-03	12:35	--	8.68'	88.98'

DATE STARTED: 4-16-03
DATE FINISHED: 4-16-03 @ 12:05
METHOD OF DRILLING: 3 1/4" HSA: 0-15'
CREW CHIEF: HAGEDORN

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 17721

PROJECT:

DATE: April 28, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: April 16, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: April 17, 2003

PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
SB-1 12-14.5	1432-03					
	4/22/2003	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
SB-2 7-9.5	1433-03					
	4/22/2003	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
SB-3 9.5-12	1434-03					
	4/22/2003	EPA 8020	Benzene	0.90	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	5.46	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	4.86	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	14.30	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	175.00	mg/kg	10 mg/kg

REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 17721

PROJECT:

DATE: April 28, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: April 16, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: April 17, 2003

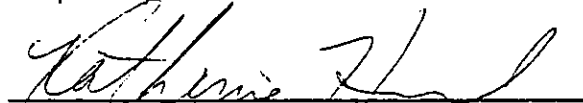
PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW-1 4.5-7	1435-03					
	4/22/2003	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg
MW-2 9.5-12	1436-03					
	4/22/2003	EPA 8020	Benzene	2.37	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Toluene	3.22	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Ethylbenzene	27.70	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	Xylenes	112.00	mg/kg	0.2 mg/kg
	4/22/2003	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	4/22/2003	California USGS	TPH as Gasoline	1673.00	mg/kg	10 mg/kg

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773

SN: 17721

CHAIN OF CUSTODY RECORD
Analytical Request

LAB: GeoTek

GEOTEK PROJECT NAME Casey's General Stores, Inc. Geotek Project # 02-A83

Address 701 N. Main St
Mitchell, SD

Geotek Project Manager JKZ

P.O. #/Billing Reference _____

Bill To _____

TRANSMITTAL OF RESULTS

Report To _____

Fax? _____

Express Mail? _____

Standard Mail? _____

Sampled by (PRINT) JERRY ZUTZ Phone# _____

Sampler Signature [Signature] Date Sampled 4-16-03

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY METHODS (State Regulatory Agency)	ANALYSIS REQUESTED										Speed of Analysis No. days if other than standard turnaround	Remarks
						BTEX/MTBE	TH as Gasoline	Naphthalene	TH as Fuel Oil/Diesel	TH as Waste Oil	TDS/TSS						
1432	SB1 12-14 1/2'	Soil	1	ND	SD DENR	X	X										
1433	SB2 7-9 1/2'		1	4		X	X										
1434	SB3 9 1/2'-12		1	120		X	X										
1435	MW1 4 1/2'-7		1	65		X	X										
1436	MW2 9 1/2'-12	✓	1	118	✓	X	X										

Relinquished by Sampler: (Signature) [Signature]

DATE/TIME
4-17-03 8:30

Received by Shipper: (Signature) _____

DATE/TIME _____

Method of Shipment: Hand Carry

Delivered by Shipper: (Signature) _____

DATE/TIME _____

Received by Laboratory: (Signature) [Signature]

DATE/TIME 4-17-03 8:30

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

REPORT OF ANALYTICAL RESULTS

PROJECT # : 02-A83-3

CHAIN OF CUSTODY # 17785

PROJECT:

DATE: May 02, 2003

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: WATER

CLIENT:

DATE SAMPLED: April 30, 2003

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: May 01, 2003

PHONE:

SAMPLER: Jeff Thorsheim 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
MW #1	1538-03					
	5/1/2003	EPA 602 (modified)	Benzene	0.010	mg/L	0.002 mg/L
	5/1/2003	EPA 602 (modified)	Toluene	<0.002	mg/L	0.002 mg/L
	5/1/2003	EPA 602 (modified)	Ethylbenzene	<0.002	mg/L	0.002 mg/L
	5/1/2003	EPA 602 (modified)	Xylenes	<0.005	mg/L	0.005 mg/L
	5/1/2003	EPA 602 (modified)	MTBE	<0.002	mg/L	0.002 mg/L
	5/1/2003	California USGS	TPH as Gasoline	<0.100	mg/L	0.1 mg/L

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

909 East 50th Street North
Sioux Falls, SD 57104
Telephone (605) 335-5512 • Fax (605) 335-0773

SN: 17785

CHAIN OF CUSTODY RECORD

Analytical Request

LAB: Geotek

GEOTEK PROJECT NAME Careys General Store

Geotek Project # 02-A83-3

TRANSMITTAL OF RESULTS

Address 701 N. Main street
Mitchell S. Dak

Geotek Project Manager Jerry Zute

Report To _____

P.O. #/Billing Reference _____

Fax? _____

Bill To Geotek

Express Mail? _____

Standard Mail? _____

Sampled by (PRINT) Red Phone# _____

Sampler Signature [Signature] Date Sampled 4-30-03

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	LABORATORY (State)	BTEX	TH as	Naphth	TH as Fuel O	TH as Waste	TDS						Speed or No days standard	Remarks
1538	mw 1	H ₂ O	3va			X	X											

Retinquished by Sampler: (Signature) <u>[Signature]</u>	DATE/TIME <u>5-1-03</u> <u>4-30-03</u>	Received by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME	Method of Shipment:
Delivered by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME	Received by Laboratory: (Signature) <u>[Signature]</u>	DATE/TIME <u>5/1/03</u> <u>13:42</u>	

LABORATORY: Was cooler received with Chain of Custody Seal intact? ☐ Yes ☐ No Initials _____

SOUTH DAKOTA DENR RBCA SITE CONCEPTUAL MODEL SHEET

SITE NAME	Casey's General Store	DATE COMPLETED	6-9-03	DENR SPILL # 2002-237
SITE LOCATION	701 N. Main, Mitchell, SD	COMPLETED BY	Jerry Zutz	

Step 1 – Baseline Exposure: Fill in Box (□) to identify applicable sources, transport mechanisms, and receptors.

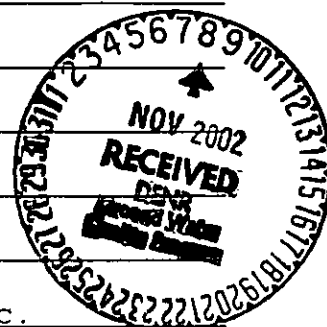
Step 2 – Remedial Measures: Fill in shut-off valves (X) to indicate removal / remedial action, containment measure, or institutional controls to be used to “shut off” exposure pathway.

PRIMARY SOURCES	SECONDARY SOURCES	TRANSPORT MECHANISMS	EXPOSURE PATHWAY	POTENTIAL RECEPTORS
<input checked="" type="checkbox"/> Storage Tanks <input checked="" type="checkbox"/> Piping/ Pump Island <input checked="" type="checkbox"/> Handling <input type="checkbox"/> Transportation Accident <input type="checkbox"/> Vandalism <input type="checkbox"/> Transformer <input type="checkbox"/> Sump Waste <input type="checkbox"/> Drums <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Affected Surface Soil (< 3.2 ft depth) <input checked="" type="checkbox"/> Affected Subsurface Soil (> 3.2 ft depth) <input checked="" type="checkbox"/> Dissolved Ground Water Plume <input checked="" type="checkbox"/> Free Phase Product	<input type="checkbox"/> Surface Water Run off (see surface soil lookup table) (Pavement) <input checked="" type="checkbox"/> Volatilization and Enclosed Space Accumulation <input checked="" type="checkbox"/> Leaching and Ground water Transport <input checked="" type="checkbox"/> Mobile Free Product	<input type="checkbox"/> Surface Water Recreational Use/ Sensitive Habitat <input checked="" type="checkbox"/> Soil Inhalation, Ingestion, or Dermal Contact (see surface soil lookup table) <input checked="" type="checkbox"/> Utilities Soil in contact Impact to Water line (see lookup table for water lines) <input checked="" type="checkbox"/> Air Inhalation of Vapor (see indoor air lookup table) <input checked="" type="checkbox"/> Air Vapors in underground utilities <input checked="" type="checkbox"/> Ground Water Potable Water Use (see MCL) <input checked="" type="checkbox"/> Utilities Ground Water in contact Impact to Water Line (see lookup table for water lines)	On-Site <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input checked="" type="checkbox"/> Construction worker On-Site <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial Off-Site <input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial

SITE SUMMARY

Date 10-21-02Department File No. 2002.237Site Name Casey's General StoreResponsible Party Casey's General Stores, Inc.Location(address) 701 N. Main StreetCity Mitchell, South DakotaLatitude/Longitude 43° 42' 57" 98° 01' 33"Consultant GeoTek Engineering & Testing Services, Inc.Source Dispensers, piping, fills, overfillsCurrent Site Classification 4

Circle All That Apply:

Land Use: Residential, Industrial, Rural, Other CommercialType of Corrective Action: Excavation, Soil Vapor Extraction, Air Sparging, Bio-Venting, Monitoring, Engineering Control (specify type), Additional Information _____Utilities Investigated: Water, Sewer, Telephone, CATV, Storm Water, other NoneEnvironmental Media Impacted: Surface Soil <3' below ground surface Subsurface Soil >3' below ground surface Groundwater, Surface Water, Indoor Air, Utilities, Outdoor Air, other NoneCubic Yards of Soil Excavated/treated est. 70 cy yds (in place)Name of Landfill/Landfarm Soiltec LLC, rural Mitchell, SDDistance to and Name of Closest Surface Water approximately 1/2 mile southwest to Dry CreekDepth/Distance to and Name of Closest Aquifer approximately 60' deep to Cretaceous Niobrara AquiferWas Free Product Present? NoNumber of Monitoring Wells Installed 0

Number of Monitoring Wells Properly Closed 0

Wellfield or Wellhead Protection Area No

Off Site Migration of Contamination (Yes/No) and Direction unknown

Sensitive Receptors Within 500 feet of Plume unknown

Proposed Action: Closure/Inactive, Tier 2 Assessment, Tier 3 Assessment, Remediation, Eliminate Exposure Route (specify) _____

Signature of Responsible Party [Signature]

For Department Use:

Reviewer: _____





**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773

SB
2002.237
COPY

October 21, 2002

Casey's General Stores, Inc.
PO Box 3001
Ankeny, Iowa 50021-0030

Attn: Mr. Glenn Norgart

Subj: Product Line Removal Observations
Casey's General Store
701 N. Main Street
Mitchell, South Dakota
GeoTek #02-A83
DENR #2002.237



Dear Mr. Norgart:

INTRODUCTION

General

This correspondence presents the written report of the Product Line Removal Observations performed at the referenced site. We are transmitting two copies of our report. Additional copies are being sent as noted below.

Purpose and Scope

The purpose of our work was to provide documentation required by the South Dakota Department of Environment and Natural Resources (DENR).

The scope of our work was limited to:

1. Mobilizing an environmental technician to the site.
2. Collecting soil samples from the excavation, and scanning the samples in the field with a photoionization detector (PID) for organic vapors as an indication of petroleum contamination.
3. Obtaining and submitting soil samples from the excavation for analysis by a chemistry laboratory for petroleum related compounds.
4. Preparing a report presenting our data, opinions, and recommendations.

Authorization

This work was authorized by Mr. Glenn Norgart's acceptance of our October 1, 2002 contract. The contract was reviewed and approved by the October 1, 2002 PRCF letter.

BACKGROUND INFORMATION

Site Location & Description

The site is located at the northwest corner of the intersection of N. Main Street and W. 7th Avenue in the central part of Mitchell, Davison County, South Dakota (Figure 1).

The site consists of a convenience store, a dispenser island, and two gasoline USTs (1-6000 gallon, and 1-10,000 gallon). The old dispensers and piping are being removed, and new piping, dispensers, and a canopy are being installed.

PROJECT RESULTS

Product Line Removal Observations

The product lines were removed on October 9 and 10, 2002. A GeoTek representative was on-site from about 10:20 AM to 1:00 PM on October 9, and from 2:30 PM to 4:50 PM on October 10. The route of the removed piping, two removed dispensers, and two USTs are shown on Figure 2.

Soils encountered in the excavation was mostly gravel or sand fill. Visibly contaminated soil was encountered in the area above the tanks, below the piping and dispensers, and in the excavation for the south canopy footing. The excavation had a petroleum odor. Groundwater was not encountered in the excavation.

Soil Sample PID Scanning

Soil samples were collected from below each former dispenser, along the piping route, near the USTs, and from the excavations for canopy footings. The PID data is provided on Table 1 and the sample locations are illustrated on Figure 2.

A review of the PID data indicates that elevated readings were recorded in several samples.

Soil Sample Laboratory Analysis

Four additional soil samples (one from below each of the two former dispensers, one from near the USTs, and one from the south canopy footing excavation) were collected. The samples were submitted to a chemistry laboratory for analysis for benzene, ethylbenzene, toluene, and xylenes, MTBE, and total petroleum hydrocarbons (TPH) as gasoline. The laboratory report is attached.

A review of the analytical data indicates that petroleum concentrations were not detected at or above the method detection limit for the parameters analyzed in two of the four samples. Petroleum was detected in two samples (#1-3', and #4-3') at 4075.00 ppm and 73.10 ppm TPH as gasoline respectively.

The SD DENR Tier 1 Action Levels are exceeded in Sample #1-3', and TPH exceeds 500 ppm. Based on the rules for petroleum contaminated soils (ARSD 74:30:33), further assessment is necessary.

RECOMMENDATIONS

We recommend a Tier 2 assessment be performed. Please note that the recommendation is subject to DENR and PRCF approval.

STANDARD OF CARE

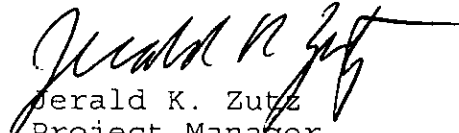
Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or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

REMARKS


A description of the methods used during the project are attached. Soil samples obtained during our work will be retained in this office for a period of thirty days from the date of this report. The samples will then be discarded unless we are notified otherwise.

GeoTek Engineering & Testing Services, Inc. appreciates the opportunity to have been of service on this project. Please contact us if, you have questions or if we can be of further service.

GeoTek Engineering & Testing Services, Inc.


Gerald K. Zutz
Project Manager
PE/Remediator #5083

This report reviewed by:


Daniel R. Hanson
Senior Project Manager
PE/Remediator #4829

cc: DENR, Pierre, Ms. Kim McIntosh
PRCF, Pierre, Mr. Ryan Collins

TABLE 1
SOIL SAMPLE PID READINGS
PRODUCT LINE REMOVAL OBSERVATIONS
CASEY'S GENERAL STORE
701 N. MAIN STREET
MITCHELL, SOUTH DAKOTA
GEOTEK #02-A83

Soil Profile	Depth (feet)	Parts Per Million
1	1	79 *
	3	125 #
2	1	1 *
	3	5
3	1	ND *
	3	52
4	1	75 *
	3	103 #
5	3	ND
	5	ND
6	3	23
	5	54
7	3	ND
	5	ND
8	3	101
	5	156 #
9	3	1
	5	3
10	3	ND
	5	ND
11	3	ND
	5	ND
12	3	ND
	5	ND
13	3	62
14	3	43
15	3	95 #
16	3	38
17	3	58
18	3	64

Notes:

= soil sample submitted for laboratory analysis.

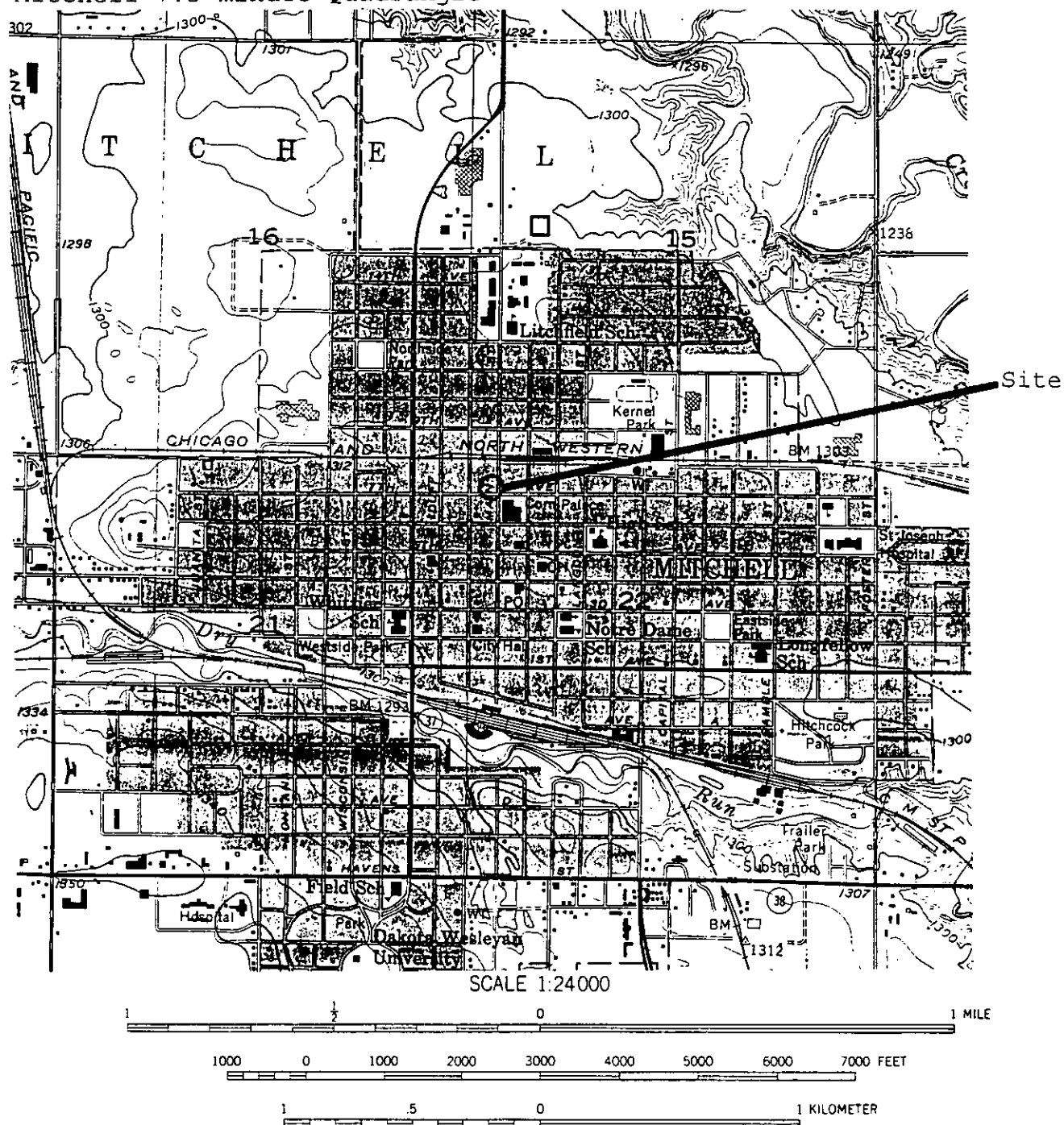
* = soil excavated and removed from site.

All readings are in parts per million (ppm) total organic vapors. Soil vapor headspace analysis was performed at the site with a photoionization detector (PID) calibrated to a benzene standard. See Figure 2 for soil sample locations.





From U.S. Geological Survey
Mitchell 7.5 minute Quadrangle



SCALE 1:24000
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

FIGURE 1
TOPOGRAPHIC MAP
CASEY'S GENERAL STORES INC.
701 NORTH MAIN STREET
MITCHELL, SOUTH DAKOTA

PROJECT #: 02-A83

DRAWN BY:

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

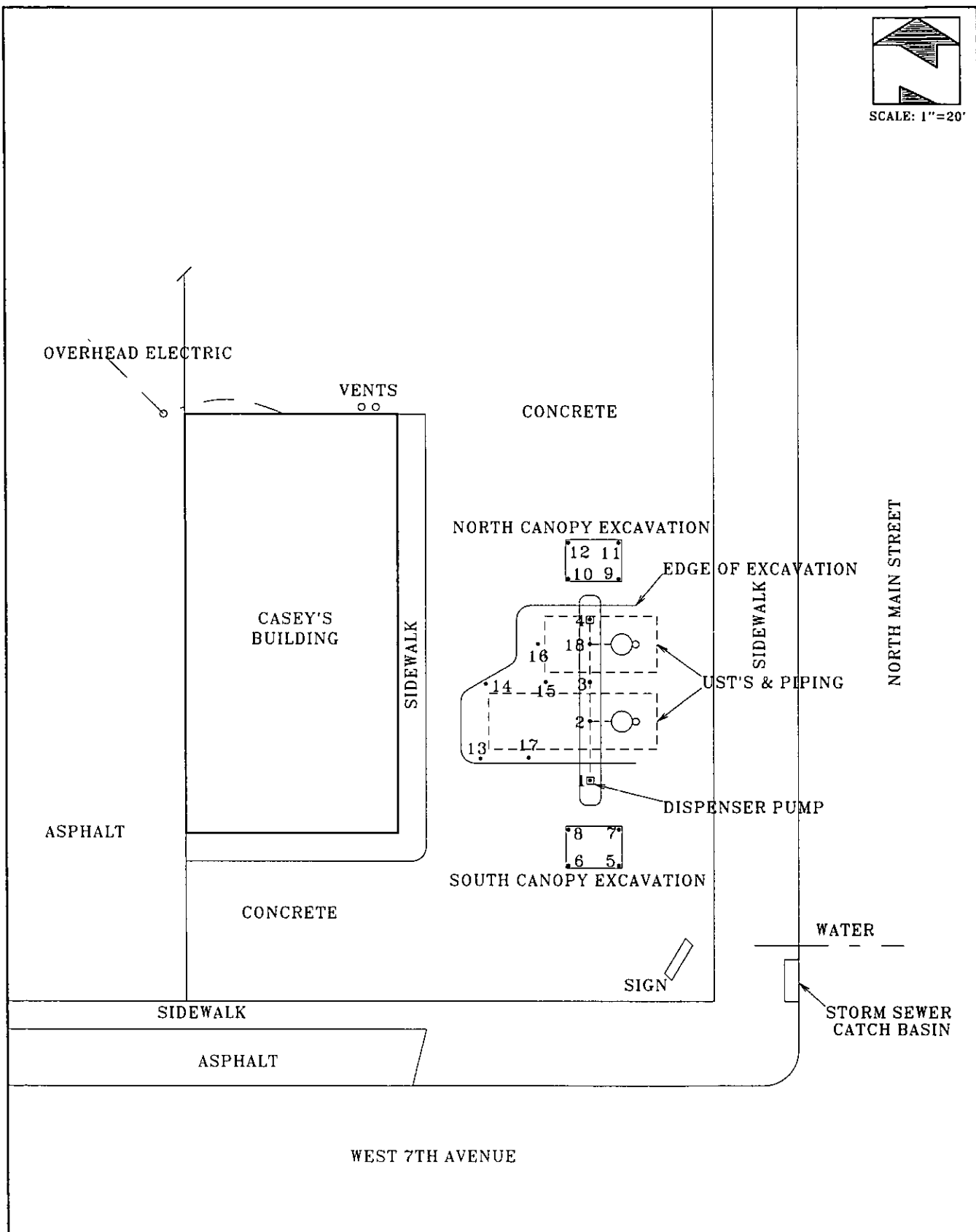


FIGURE 2
SOIL SAMPLE LOCATIONS
CASEY'S GENERAL STORES INC.
701 NORTH MAIN STREET
MITCHELL, SOUTH DAKOTA

PROJECT #: 02-A83

DRAWN BY: JK

CHECKED BY:

**GEOTEK ENGINEERING &
TESTING SERVICES, INC.**

REPORT OF ANALYTICAL RESULTS

PROJECT # : 02-A83-3

CHAIN OF CUSTODY # 17350

PROJECT:

DATE: October 17, 2002

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: October 10, 2002

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: October 11, 2002

PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
#1 - 3'	3180-02					
	10/15/2002	EPA 8020	Benzene	1.01	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Toluene	8.51	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Ethylbenzene	20.70	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Xylenes	282.00	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	California USGS	TPH as Gasoline	4075.00	mg/kg	10 mg/kg
#4 - 3'	3181-02					
	10/16/2002	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	10/16/2002	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	10/16/2002	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	10/16/2002	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	10/16/2002	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	10/16/2002	California USGS	TPH as Gasoline	73.10	mg/kg	10 mg/kg
#8 - 5'	3182-02					
	10/15/2002	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg



REPORT OF ANALYTICAL RESULTS

PROJECT #: 02-A83-3

CHAIN OF CUSTODY # 17350

PROJECT:

DATE: October 17, 2002

CASEY'S GENERAL STORE
MITCHELL, SOUTH DAKOTA

SAMPLE MEDIUM: SOIL

CLIENT:

DATE SAMPLED: October 10, 2002

Casey's General Stores, Inc.
PO Box 3001
Ankeny, IA 50021

DATE RECEIVED: October 11, 2002

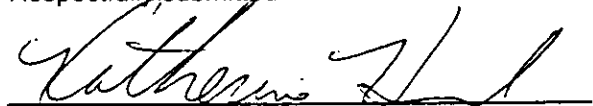
PHONE:

SAMPLER: Jerry Zutz 605-335-5512

<u>Site</u>	<u>Lab ID#</u>	<u>Method</u>	<u>Compound Analyzed</u>	<u>Test Results</u>	<u>Units</u>	<u>Method</u> <u>Detection Limit</u>
#15 - 3'	3183-02					
	10/15/2002	EPA 8020	Benzene	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Toluene	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Ethylbenzene	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	Xylenes	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	EPA 8020	MTBE	<0.20	mg/kg	0.2 mg/kg
	10/15/2002	California USGS	TPH as Gasoline	<10.00	mg/kg	10 mg/kg

Analysts: Katherine Howard and Jason Cook

Respectfully submitted



Katherine Howard, Laboratory Supervisor


**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**

909 East 50th Street North

Sioux Falls, SD 57104

Telephone (605) 335-5512 • Fax (605) 335-0773

CHAIN OF CUSTODY RECORD
 Analytical Request
LAB: Geotek

GEOTEK PROJECT NAME Casey's General Store Geotek Project # 02-A83 **TRANSMITTAL OF RESULTS**
 Address 701 N. Main Ave Geotek Project Manager JKZ Report To _____
Mitchell, SD P.O. #/Billing Reference _____ Fax? _____
 Bill To _____ Express Mail? _____
 Standard Mail? _____

Sampled by (PRINT) JERRY ZUTZ Phone# _____Sampler Signature [Signature] Date Sampled 10-10-02

Sample No.	Sample Description	Sample Type	No. of Contain.	PID Reading	ANALYSIS REQUESTED										Speed of Analysis No. days if other than standard turnaround	Remarks
					LABORATORY METHODS (State Regulatory Agency)	BTEX/MTBE	TH as Gasoline	Naphthalene	TH as Fuel Oil/Diesel	TH as Waste Oil	TDSTSS					
3180	#1 - 3'	SOIL	1	125	SD DENR	X	X									
3181	#4 - 3'	↓	1	103	↓	X	X									
3182	#8 - 5'	↓	1	156	↓	X	X									
3183	#15 - 3'	↓	1	95	↓	X	X									

Relinquished by Sampler: (Signature) <u>[Signature]</u>	DATE/TIME <u>10-11-02 9:15</u>	Received by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME _____	Method of Shipment: <u>Hand Carry</u>
Delivered by Shipper: (Signature) <u>[Signature]</u>	DATE/TIME _____	Received by Laboratory: (Signature) <u>[Signature]</u>	DATE/TIME <u>10/11/02 9:17</u>	

LABORATORY: Was cooler received with Chain of Custody Seal intact? Yes No Initials _____

ATTACHMENT C

METHODS

DECONTAMINATION

Prior to mobilization of the drill rig, the down-hole drilling equipment and associated tools are steam cleaned. Additionally, the down-hole drilling equipment and associated tools are steam cleaned after each boring where contamination is encountered. Also, the split barrel sampler is washed with a trisodium phosphate solution and rinsed in potable water after each contaminated sample.

SOIL BORING AND SAMPLING

The boreholes are advanced with a truck-mounted, rotary, drill rig using flight auger or hollow stem auger drilling methods. Flight auger and hollow stem auger soil samples are obtained directly from the auger flights during drilling. Split barrel soil samples are obtained by advancing a 2" outside diameter split barrel sampler into the soil a distance of 2 1/2'.

Soil samples for field petroleum vapor scanning are placed in clean, 8 oz. glass jars covered with aluminum foil, and sealed with lids. Sample jar identification labels are completed indicating the job number, boring number, sample number, sample depth, date sampled, and the sampling personnel's initials.

Soil samples for laboratory chemical analysis are placed in laboratory provided containers. Sample container identification labels are completed indicating the job number, sample location, boring number, boring depth, date sampled, analysis required, and sampling personnel's initials.

SOIL SAMPLE ORGANIC VAPOR SCANNING

The recovered soil samples are scanned with a photoionization detector (PID) equipped with a 10.2 eV lamp. The instrument is calibrated for direct readings in parts per million (ppm) of benzene. The instrument has a reported accuracy range under ideal operating conditions of 1 to 2000 ppm.

Following a minimum 10-minute delay after sample collection, the jar is agitated and the PID probe is used to penetrate the aluminum foil following removal of the sample jar lid. The peak reading (usually within 10 seconds) is recorded on the identification label. Samples obtained during unfavorable weather conditions (below 40°F or during precipitation) are warmed and stored in a vehicle or building prior to taking PID readings.

MONITORING WELL DEVELOPMENT

Monitoring well development is performed with dedicated bottom loading bailers. The wells are bailed until relatively sediment free water is produced or until the well became dry. Groundwater level data and sampling information forms are completed during development.

MONITORING WELL EVACUATION AND WATER QUALITY SAMPLING

Stagnant water is evacuated from the wells prior to water quality sampling using a dedicated bottom loading bailer. Water is bailed from the well until three well volumes were removed or until the well becomes dry. Groundwater level data and sampling information forms are completed during sampling.

WATER LEVELS

Water levels in monitoring wells area obtained by using a water level meter (dip meter). The meter consists of a stainless steel electrode or a brass plated probe connected to a polyethylene flap tape (permanently marked to 1/20 of a foot) containing two stainless steel conductors. The probe is lowered into the monitoring well and, when contact is made with the water, the circuit is completed activating a clearly audible buzzer. The distance between the water surface and the top of the riser is measured using the flat tape. All measurements are reported to the nearest 0.01 foot.

PRODUCT THICKNESS

Product thickness in monitoring wells is obtained by using an oil-water interface gauge. The gauge consists of a sonic probe connected to a gauging tape (permanently marked to 1/32 of a foot). The probe is lowered into the monitoring well and when the gap in the sonic probe is fully immersed in product, a continuous audible signal will be heard. The distance between the air/product and product/water interfaces and the top of riser is measured using the gauging tape. The product thickness is then determined by subtraction and air/product and product/water interface measurements. All measurements are reported to the nearest 0.01'.

WATER QUALITY SAMPLING

Stagnant water in the wells is removed prior to water quality sampling by using a dedicated, bottom loading bailer. Water is bailed from the well until a minimum of three well volumes are removed or until the well becomes dry. Groundwater level data and sampling information forms are then completed during sampling.

Water quality samples are obtained using the dedicated, bottom loading bailers. Volatile samples are transferred directly from the bailers into laboratory provided, 40 milliliter, purge and trap vials. Semi-volatile samples are collected in laboratory provided containers. Sample container identification labels are then completed indicating the job number, sample location, date sampled, analysis required, and sampling personnel's initials.

CHAIN OF CUSTODY

Analytical sample information is recorded on a chain of custody form following sample collection. The chain of custody record accompanies the samples during transit back to GeoTek's office, during storage, and during any subsequent shipment to a contract laboratory. A copy of the record is always kept by GeoTek. Upon completion of the laboratory analysis, the completed chain of custody record is returned to GeoTek.



ANALYTICAL PROCEDURES

BTEX and Volatile Petroleum Hydrocarbons Analytical Method For Water and Soil:

1. Method Reference

- a. BTEX Water Method - EPA 602
- b. TPH as Gasoline Water Method - LUFT Field Manual, State of California, October 1989
- c. BTEX or TPH Soil Method - LUFT Field Manual, State of California October 1989

2. Equipment

- a. as Chromatograph
Hewlett Packard 5890 GC
Hewlett Packard Dual Channel Integrator
OI Analytical Tandem Photoionization/flame ionization detectors
30 meter Megabore DB-5 J & W Capillary Column

- b. Stripping Device
Dynatech Dynawaters Purge and Trap Autosampler

3. Water Sample Analysis

- a. Each sample will be analyzed no more than fourteen (14) calendar days after its receipt by the laboratory. The sample will be refrigerated upon receipt and allowed to warm to room temperature before analysis.
- b. An automated sampling syringe draws a 5 mL sample directly from a VOA pressurized by nitrogen. The sample is automatically spiked with 1.0 uL of surrogate standard. The sample is purged at a nitrogen flowrate of 35 mL/minute for approximately 11 minutes with heating. The sample is trapped on a Supelco type H, Carboxpack B/Carboxieve S-III trap. After purge, the sample chamber is automatically emptied and flushed two times with 5 mL portions of reagent water.
- c. After sample trapping the trap is heated to 230°C for 6 min. to desorb the sample. The sample is flushed through the transfer lines to the GC with helium at a flow rate of 7 mL/min.
- d. Analytes are trapped at the head of the column at 37°C, then temperature programming brings them through to the PID/FID detector.

4. Soil Sample Analysis

- a. Each sample will be analyzed no more than fourteen (14) calendar days after its receipt to the laboratory. The sample will be refrigerated upon receipt and allowed to warm to room temperature before analysis.
- b. THE NEXT THREE STEPS WILL BE DONE SWIFTLY AND WITHOUT DELAY. Without discarding any supernat liquids the entire contents of a soil sample will be mixed with a spatula. Then 5 g of the sample will be transferred into a tared vial containing 10 mL of methanol and re-weighed to the nearest 0.1 g to determine an exact sample weight. The sample will then be capped and extracted by shaking for 2 min and sonicated for 20 min. After the sample has been allowed to settle and equilibrate for 30 min., an aliquot of the methanol extract will be pipette into an amber crimper vial for analysis and an aliquot of the extract will be pipette into a second vial for storage. All samples will be stored in the dark at 4°C.

- c. An aliquot of 0.4 ml of sample from the analysis vial will be injected into a 43 mL VOA. The VOA will be tared, filled with reagent water and re-weighed to determine the amount of water added. The sample is then treated as described in 3.b through 3.d.

5. Instrumental Operating Conditions

GC Parameters TDU Parameters

	Temp	Time
Injector	Off	Purge Vessel Preheat 40°C 2 min
FID	200°C	Purge 11 min
Signal Range	5	Dry Purge 8 min
Attenuation	1	Desorb Preheat 35°C
Chart Speed	1 c/min	Desorb 230°C 4 min
		Bake 250°C 6 min
		Transfer Line 150°C
		Valve Oven 150°C

Temperature Program	Hold at 37 for 5 min
	10°C/min to 190°C
	70°C/min to 270°C
	Hold at 270°C for 3 min
	Automatic cool down to start conditions

6. Analyte Identification and Quantitation

- a. BTEX compounds are identified by retention time in comparison to a standard.
- b. TPH Contamination is identified by comparison to the fingerprint of an actual gasoline standard of similar composition.
- c. All values are quantified using a calibration curve of a minimum of 5 points with a correlation of 0.975 or greater. The validity of the calibration curve is checked by comparison to a check standard that is run at start-up each week. If the standard is not within 10% of calibration value the system is recalibrated. Daily calibration is assured by the addition of the surrogate 4-bromofluorobenzene to each run.
- d. QAQC samples routinely consist of the following: System Blanks - run daily and after each batch; Trip Blanks - provided by the sampler with each sampling trip; Matrix Spikes - 20% or one each batch which ever is greater; Check Standards - analyzed weekly, a stated in 6.c; Blind Spikes - from outside source, analyzed quarterly.

Extractable Petroleum and Related Low Volatility Organic Method for Water and Soil

1.Method Reference

- a. LUFT Field Manual, State of California, October 1989

2.Equipment

- a. Gas Chromatograph
Hewlett Packard 5890 GC w/Terminal
Hewlett Packard 7673A Automatic Sampler
Hewlett Packard Flame Ionization Detector
30 meter Megabore DB-5 J&W Capillary Column
- b. Miscellaneous
Model 500 Ultrasonic Dismembrator
2 liter funnels
Kaderna Danish concentrators
Pesticide grade methylene chloride



3..... Water Sample Analysis

a. Each sample will be extracted no more than fourteen (14) calendar days and analyzed no more than forty (40) days after its receipt by the laboratory. The sample will be refrigerated upon receipt.

b. The meniscus of the sample will be marked on the sample jar. After analysis, the jar will be refilled to the mark and the water volume measured with a graduated cylinder. The water sample will be poured into a 2 L separatory funnel. The first 60 mL aliquot of methylene chloride will be used to rinse the sample jar (but not the lid) before it is added to the separatory funnel. The sample will be extracted by shaking for 2 min. This methylene chloride extraction will be repeated two more times.

c. A funnel for each sample will be prepared by placing a plug of glass wool in the funnel and filling it 2/3 full with Na_2SO_4 . Before any extract is introduced the Na_2SO_4 filled funnel will be rinsed with a 30-40 mL aliquot of methylene chloride that will be discarded. The extracts will be poured through the funnels into a Kuderna-Danish concentrator. A boiling chip will be added and the snyder column pre-wet by adding 1 mL of methylene chloride to the top. The concentrators will be placed in a 95°C water bath until 5-10 mL of the extract remains. If the extract is highly colored or forms a precipitate a larger volume will be left. After the concentrators have cooled, the Snyder column, middle flask and ground glass joints will be rinsed with a small amount of methylene chloride. The sample will then be evaporated to exactly 4 mL under a stream of nitrogen.

The sample will be pipetted into two amber crimp-top vials, one for storage and one for analysis. The meniscus on the vials will be marked and the vials will be stored in the dark at c. The sample may be optionally spiked with 5-alpha androstane at a concentration of 20 ug/mL as an internal standard. However, the internal standard should not be used when final concentration of the sample exceeds 2000 ug/mL due to the possibility of co-elution with contaminants.

d. Two (2) uL of the extract will be injected onto the GC for comparison with standards.

4..... Soil Sample Analysis

a. Each sample will be extracted no more than fourteen (14) calendar days and analyzed no more than forty (40) days after its receipt by the laboratory. The sample will be refrigerated upon receipt and allowed to warm to room temperature before analysis.

b. Any supernatant liquids will be decanted. The entire contents of a soil sample will be thoroughly mixed with a spatula. The 30 g of the sample will be transferred into a tared 250 mL amber bottle and re-weighed to the nearest 0.1 g to determine an exact sample weight. Sixty (60) g of Na_2SO_4 will be added to the sample and mixed well. At this time the optional surrogate ortho-terphenyl may be added. One hundred (100)mL of methylene chloride will be added and the sample capped. The sample will then be sonicated 3 min. with ¼" dismembrator horn. The extract will then be filtered under suction or pressure using Whatman No. 41 filter paper. Two (2) more extractions using 100mL methylene chloride will be performed in the same manner. The extracts will then be treated as described in section C.2.c through C.2.d.

5..... Instrumental Operating Conditions

GC Parameters

Injector.....250°C
FID.....250°C
Attenuation.....8
Chart Speed.....1cm/min.

Temperature Program Hold at 50 for 5 min.

20°C/min to 270°C
Hold at 270°C for 15 min.
Automatic cool down to start conditions

6. Analyte Identification and Quantitation

a. TPH Contamination is identified by comparison to the fingerprint of an actual petroleum fraction standard of similar composition.

b. All values are quantified using a calibration curve of a minimum of 5 points with a correlation of 0.975 or greater. The calibration curve is prepared for each new batch of injections.

c. QAQC samples routinely consist of the following: System Blanks - run daily after each batch, and after concentrated samples; Matrix Spikes - 20% or one each batch which ever is greater; Blind Spikes - from outside source, analyzed quarterly.



SITE SUMMARY

Date 10-21-02

Department File No. 2002.237

Site Name Casey's General Store

Responsible Party Casey's General Stores, Inc.

Location(address) 701 N. Main Street

City Mitchell, South Dakota

Latitude/Longitude 43° 42' 57" 98° 01' 33"

Consultant GeoTek Engineering & Testing Services, Inc.

Source Dispensers, piping, fills, overfills

Current Site Classification 4

Circle All That Apply:

Land Use: Residential, Industrial, Rural, Other Commercial

Type of Corrective Action: Excavation, Soil Vapor Extraction, Air Sparging, Bio-Venting, Monitoring, Engineering Control (specify type), Additional Information _____

Utilities Investigated: Water, Sewer, Telephone, CATV, Storm Water, other None

Environmental Media Impacted: Surface Soil <3' below ground surface Subsurface Soil >3' below ground surface Groundwater, Surface Water, Indoor Air, Utilities, Outdoor Air, other None

Cubic Yards of Soil Excavated/treated est. 70 cy yds (in place)

Name of Landfill/Landfarm Soiltec LLC, rural Mitchell, SD

Distance to and Name of Closest Surface Water approximately 1/2 mile southwest to Dry Creek

Depth/Distance to and Name of Closest Aquifer approximately 60' deep to Cretaceous Niobrara Aquifer

Was Free Product Present? No

Number of Monitoring Wells Installed 0

Number of Monitoring Wells Properly Closed 0

Wellfield or Wellhead Protection Area No

Off Site Migration of Contamination (Yes/No) and Direction unknown

Sensitive Receptors Within 500 feet of Plume unknown

Proposed Action: Closure/Inactive, Tier 2 Assessment, Tier 3
Assessment, Remediation, Eliminate Exposure Route (specify) _____

Signature of Responsible Party 

For Department Use:

Reviewer: _____



FILE COPY
2002.237

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

DENR – Sioux Falls Office
4305 S Louise Ave
Sioux Falls, SD 57106

January 22, 2003

GLENN NORGART
CASSEYS GENERAL STORES, INC
PO BOX 301
ANKENY, IA 50021-0030

RE: Cassey's General Stores Inc., 701 North Main Street, Mitchell, SD
SDDENR File # 2002.237

Dear Mr. Norgart:

The Department of Environment and Natural Resources (DENR) has completed its review of Geotek Engineering's report 'Product Line Removal Observations' dated October 21, 2002, for the above referenced facility. The report indicates contaminated soils exist in excess of DENR's Tier 1 soil action levels and the 500 part per million total petroleum hydrocarbons trigger level. Contamination exceeding these levels has the potential to pose risk to human health and the environment. Because of the potential for risks, DENR is requiring that a Tier 2 assessment of the site be conducted.

The Tier 2 assessment must evaluate the site for receptors and exposure pathways to determine any risk potential. This is to include determining the location, depth and construction of underground water and sewer lines in the area. Vapor screening of the sewer lines should be done if it appears vapor impacts may occur. Additional assessment may be necessary if it appears potentially completed exposure pathways are present or if adjacent properties have been impacted. If it is determined the ground water is in contact with contaminated soil, and the subsurface material is a considered an aquifer, a minimum of three monitoring wells will need to be installed to determine the extent of ground water contamination. The need for additional clean-up actions and monitoring will be based on the review of the Tier 2 assessment results.

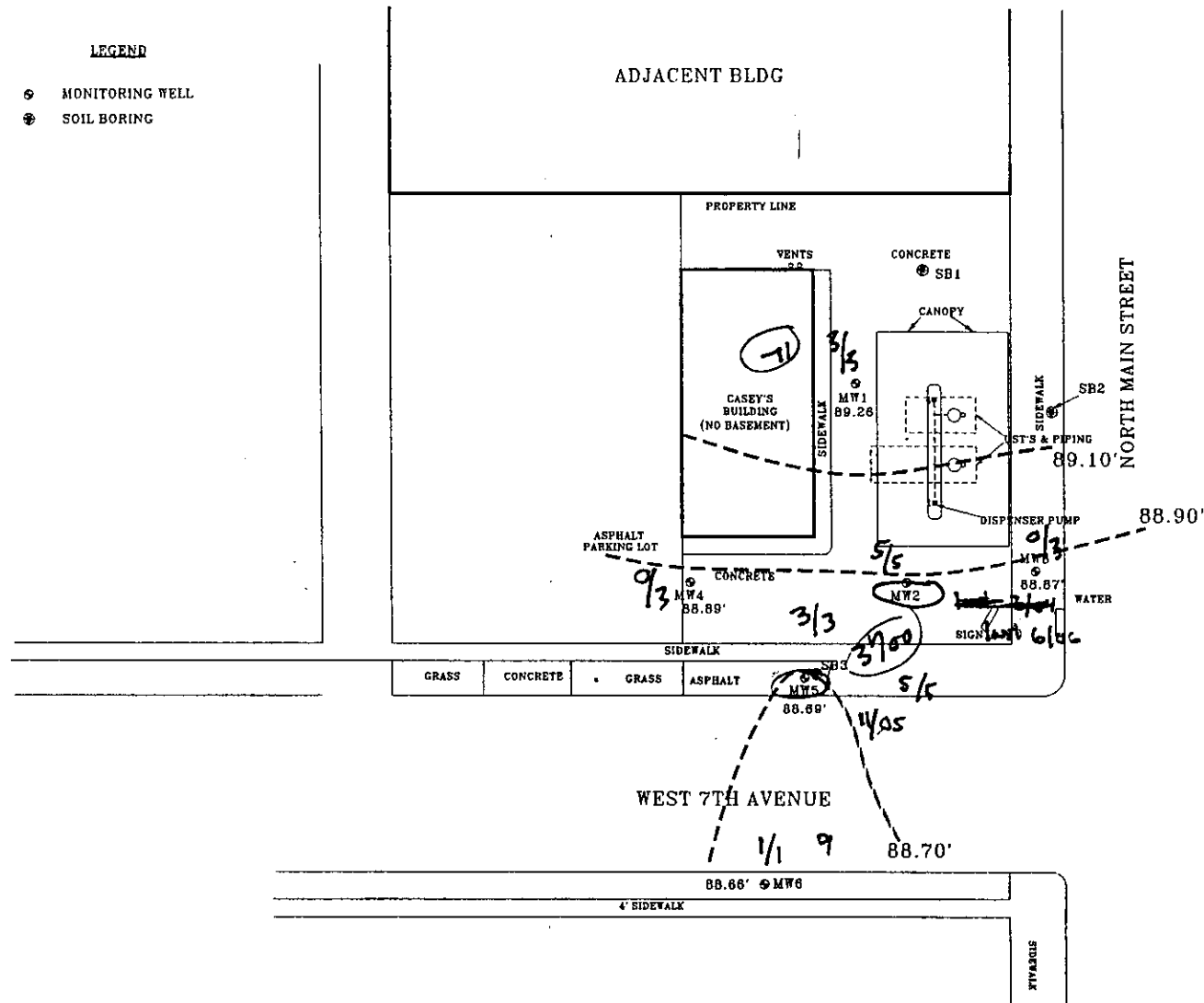
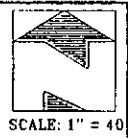
Thank you for your cooperation in this matter. If you have any further question regarding this letter, please contact me at (605) 362-3500.

Sincerely,

Scott J. Bickler

C: Doug Miller, DENR
Dennis Rounds, PRCF
Jerald K. Zutz, Geotek Engineering

- LEGEND**
- MONITORING WELL
 - ⊗ SOIL BORING



WATERLEVELS OF 6-26-06

FIGURE 1
ESTIMATED GROUNDWATER CONTOUR MAP
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD

PROJECT #: 02-A83

DRAWN BY: BWE

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

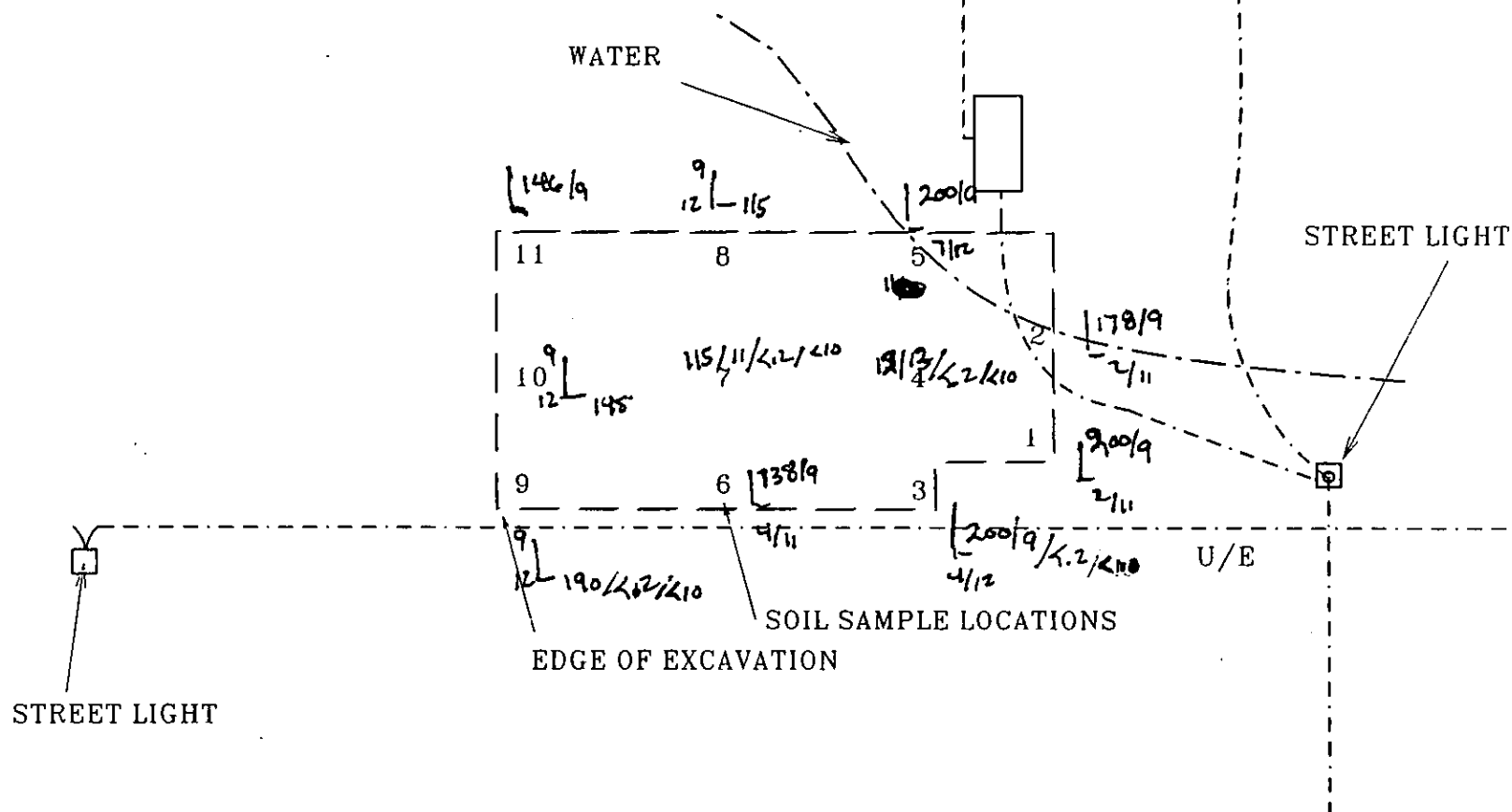


FIGURE 3
SOIL SAMPLE LOCATIONS
CASEY'S GENERAL STORES INC.
701 N. MAIN ST.
MITCHELL, SD.

PROJECT #: 02-A83

DRAWN BY: RDS

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

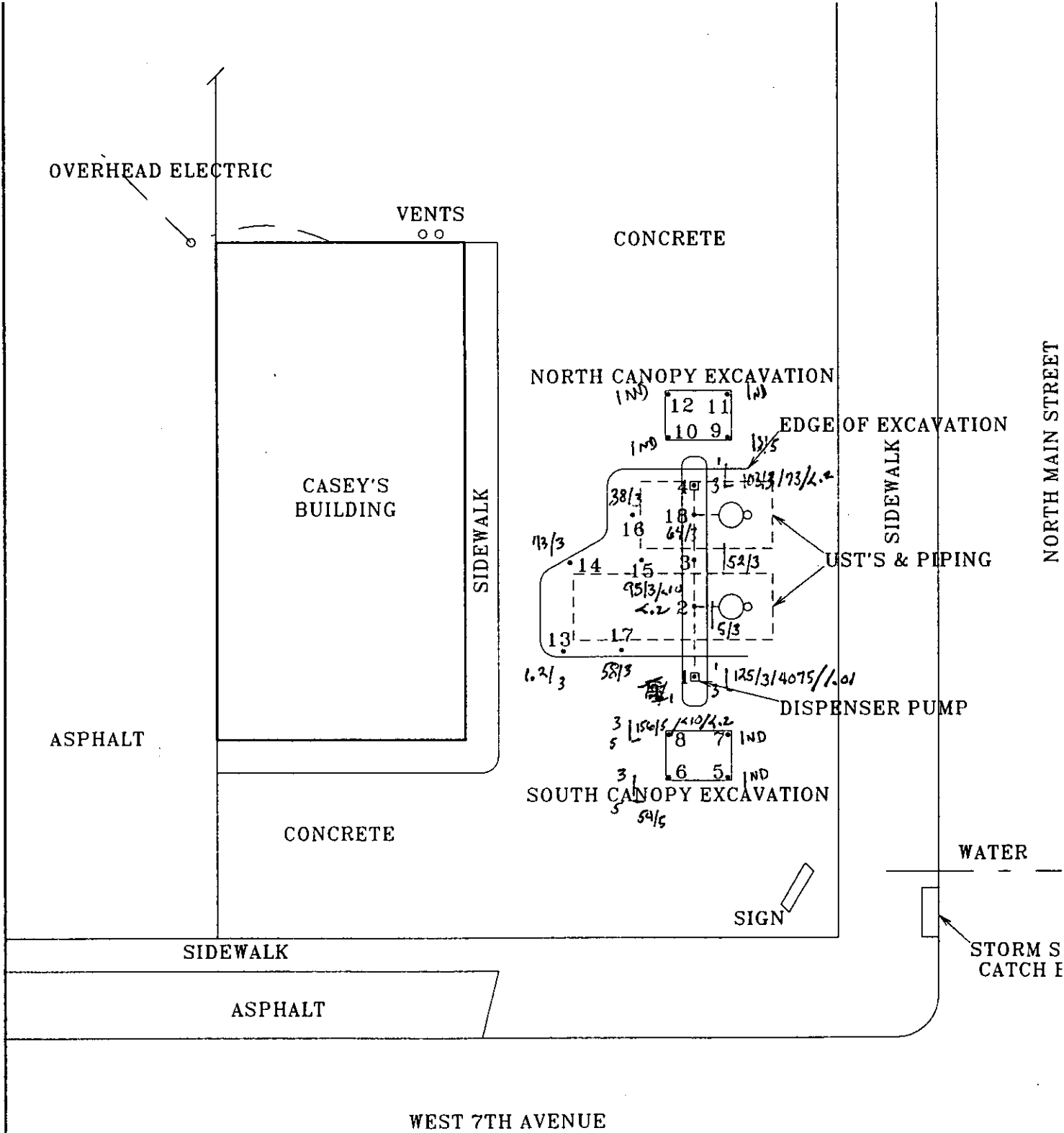


FIGURE 2

SOIL SAMPLE LOCATIONS
CASEY'S GENERAL STORES INC.
701 NORTH MAIN STREET
MITCHELL, SOUTH DAKOTA

PROJECT #: 02-A83

DRAWN BY: JK

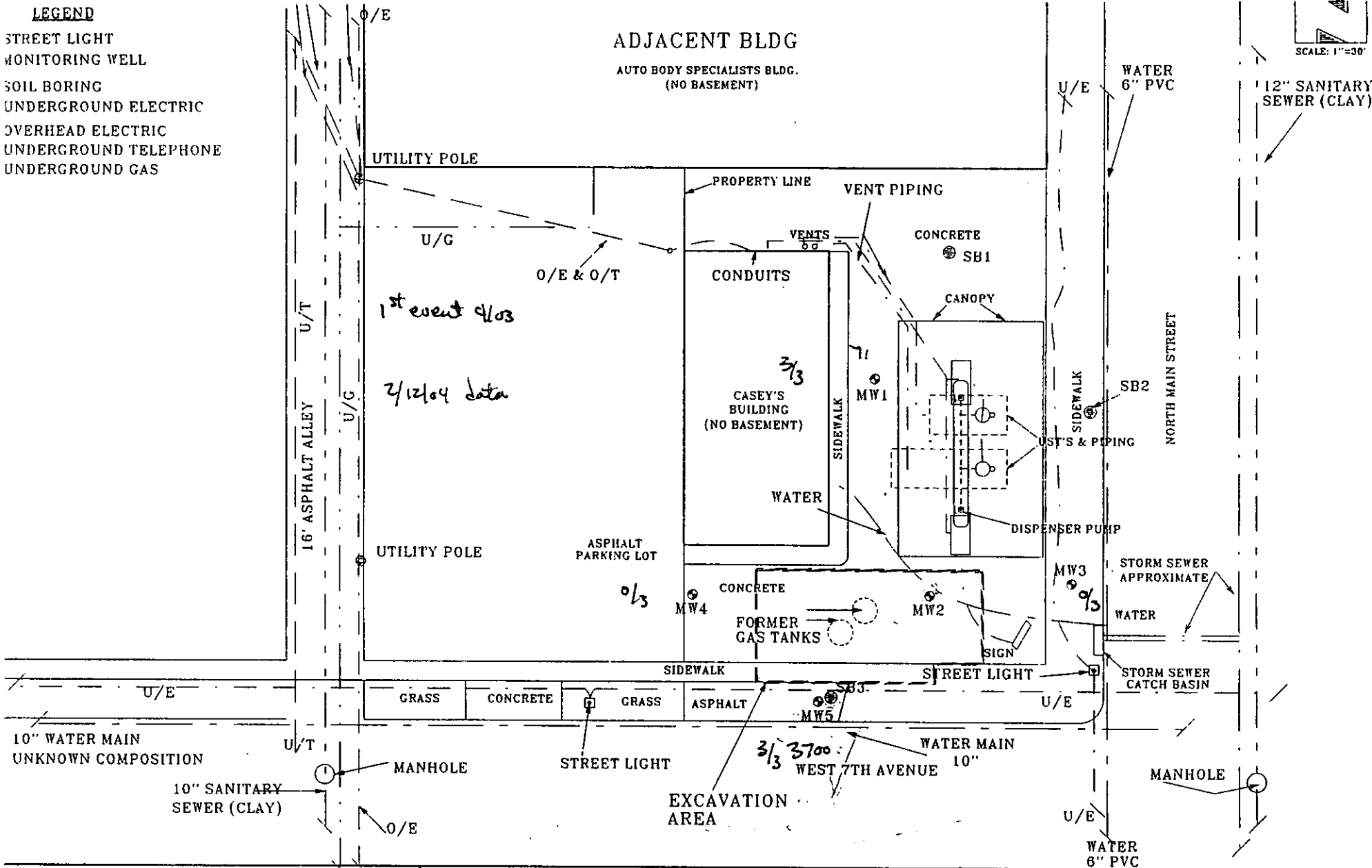
CHECKED BY: /

GEOTEK ENGINEERING
TESTING SERVICES, I

STREET LIGHT
MONITORING WELL
SOIL BORING
UNDERGROUND ELECTRIC
OVERHEAD ELECTRIC
UNDERGROUND TELEPHONE
UNDERGROUND GAS

**AUTO BODY SPECIALISTS BLDG.
(NO BASEMENT)**

SCALE: 1"=30'



E 2
AP
'S GENERAL STORES INC.
MAIN ST.
ELL, SD.

PROJECT #: 02-A83

DRAWN BY: RDS

CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

Produced in New-S 11/05