



A

 United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</i>		I. EPA ID Number	
Read Attached Instructions Before Starting For Official Use Only			
Application approved mo day year		Date received mo day year	
Permit Number		Well ID	
FINDS Number			
II. Owner Name and Address		III. Operator Name and Address	
Owner Name Sunoco Partners Marketing & Terminals LP.		Owner Name Sunoco Partners Marketing & Terminals LP.	
Street Address 7155 Inkster Road (313) 292-8850		Street Address 7155 Inkster Road (313) 292-8850	
Phone Number		Phone Number	
City Taylor		City Taylor	
State MI		State MI	
ZIP CODE 48180		ZIP CODE 48180	
IV. Commercial Facility		V. Ownership	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	
VI. Legal Contact		VII. SIC Codes	
<input checked="" type="checkbox"/> Owner <input type="checkbox"/> Operator			
VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A operating		<input checked="" type="checkbox"/> B Modification/Conversion	
Date Started mo day year (+) 1950		<input type="checkbox"/> C. Proposed	
Cavern expansion within adjacent SPMT properties within the cities of Taylor (Cavern # 4 & 5) and Romulus (# 7 & 9)			
IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A Individual		<input checked="" type="checkbox"/> B. Area	
Number of Existing Wells Two (2)		Number of Proposed Wells Zero (0)	
		Name(s) of field(s) or project(s) Sunoco Inkster Facility (City of Romulus)	
X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s))		B. Type(s) (enter code(s))	
III		G	
C. If class is "other" or type is code "X," explain		D. Number of wells per type (if area permit)	
N/A		Two existing LPG storage caverns to be expanded.	
XI. Location of Well(s) or Approximate Center of Field or Project			
Latitude		Longitude	
Deg Min Sec		Deg Min Sec	
42 15		83 18	
Township and Range		Feet From	
Sec Twp Range 1/4 Sec		Line Feet From Line	
12 3S 9E NE		150 E 1000 N	
XII. Indian Lands (Mark "x")			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
XIII. Attachments			
<i>(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)</i>			
For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.			
XIV. Certification			
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment (Ref 40 CFR 144.32)			
A. Name and Title (Type or Print)		B. Phone No. (Area Code and No.)	
Jonathan O. Ojany		(313) 292-9822	
C. Signature		D. Date Signed	
		July 22, 2004	

 United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act, Sections 1421, 1422, 40 CFR 144)</i>		I. EPA ID Number													
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Phone Number			Phone Number												
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IV. Commercial Facility		V. Ownership		VI. Legal Contact											
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other		<input checked="" type="checkbox"/> Owner <input type="checkbox"/> Operator											
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		Name(s) of field(s) or project(s) Sunoco Inkster Facility (City of Taylor)													
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A. Class(es) (enter code(s))		B. Type(s) (enter code(s))		D. Number of wells per type (if area permit)											
III		G		Two existing LPG storage caverns to be expanded.											
C. If class is "other" or type is code "X," explain N/A															
XI. Location of Well(s) or Approximate Center of Field or Project				XII. Indian Lands (Mark "X")											
Latitude		Longitude		Township and Range											
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line		
42	15		83	18		7			NW	400	W	400	E		
XIII. Attachments															
(Complete the following questions on a separate sheet(s) and number accordingly; see instructions) For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.															
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A. Name and Title (Type or Print) Jonathan O. Ojany										B. Phone No. (Area Code and No.) (313) 292-9822					
C. Signature 										D. Date Signed July 22, 2004					



Sunoco Logistics

Jonathan O. Ojany
Regional Engineer - Projects
Sunoco Pipeline L.P.
7155 Inkster Road
Taylor, MI 48180

Telephone: (313) 292-9822
Facsimile: (313) 292-3447

MI-163-36-A002

June 22, 2004

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

RECEIVED

JUN 22 2004

UIC BRANCH
EPA REGION 5

ATTN: Patrick Saieh

RE: Expansion of Sunoco Partners Marketing and Terminal LLP's SE Michigan Caverns
Cities of Taylor and Romulus, Wayne County, Michigan

Dear Mr. Saieh,

As you are aware, Sunoco Partners Marketing and Terminal LLP's is looking at expanding 4 of its caverns located at our property in Wayne County, Michigan. Consequently, as required by your agency, we are submitting a CLASS III type "G" 'solution mining well' application.

Included, please find EPA form 7520-6 for Class III, type "G" existing wells: There are 4 existing caverns to be increased in volume within the SPMT facility in Wayne Co. Mi. We are thus applying for an area permit. As required by the form, please find included in this application supporting documentation for:

- A. Area of Review Methods - *Attached*
- B. Maps or well / area of review - *Attached*
- C. Corrective action plan and well data - *Attached*
- D. Maps and cross section of USDW - *Attached*
- E. *N/A*
- F. Maps and cross section of geologic structure of area - *Attached*
- G. *N/A*
- H. Operating data. - *Attached*
- I. *N/A*

J. Stimulation program.

Propose passive leaching of salt from cavern walls. Replace use of brine for LPG replacement with use of fresh water for leaching. All caverns not targeted for growth shall have STILL brine as a displacement fluid.

K. Injection procedures.

Using existing operation procedure

L. N/A

M. Construction details

Will use the existing cavern setup, simply substituting water for brine to leach only for caverns targeted for expansion.

N. Changes in injected fluids

Brine (attached typical MSDS sheet) and water

O. Plans for well failures - Attached

P. Monitoring program

Use of current existing safety and alarm mechanisms.

Q. Plugging and abandonment plan - Attached

R. Necessary resources - To be provided under separate cover

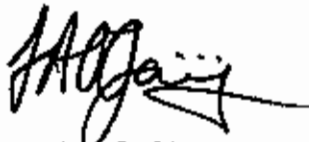
S. Aquifer exemptions - Existing formation already used for LPG storage. Application to increase cavern volumes

T. Existing EPA permits - N/A

U. Description of business - Attached

Please contact me at (313) 292-9822 if you have any further questions regarding this application.

Sincerely,



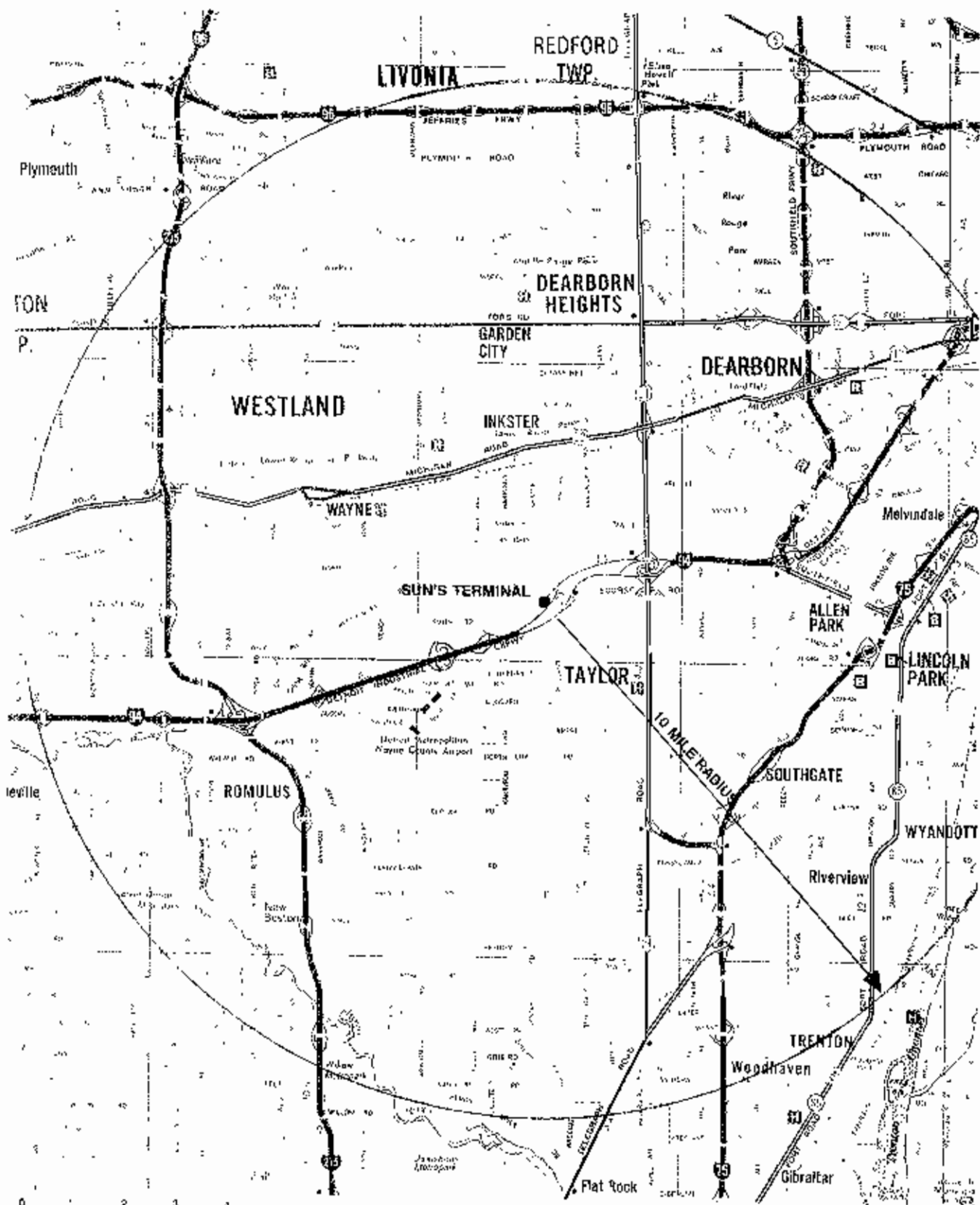
Jonathan O. Ojany

Regional Engineer - Projects

Cc:	David Justin	- Sunoco Logistics	wo/att
	Michael Kelley	- Sunoco Logistics	w/att
	Robert Ryan	- Sunoco Logistics	w/att
	Joe Van Wagnen	- Van Wagnen Engineering	w/att
	Joseph Young	- Sunoco Logistics	wo/att
	File		w/att

A. Area of Review Methods –
Attached

B. Maps or well / area of
review – *Attached*



0 1 2 3 4
 ONE INCH EQUALS APPROXIMATELY 2.5 MILES

DETROIT AREA

ATTACHMENT B
MAPS OF WELLS/AREA OF REVIEW

1. Topographic Map

Exhibit B-1, found in the Exhibit Section, is a composite map made from the USGS 7 1/2" sheets, Inkster and Flat Rock NE Quadrangles. The Sun facility property is indicated on the map with all existing well locations and the proposed well location. A 2-mile radius area of review (AOR) is indicated from the proposed Well 1A location. No intake or discharge structures, hazardous waste treatment, storage or disposal facilities are indicated or found during a field investigation of the AOR.

All wells, springs and surface bodies of water are indicated on the USGS topo map. Records of drinking water wells were not found in the AOR in the public records reviewed. The area is serviced by the City of Detroit municipal water system. Surveillance of the area found some wells at old farms outside the AOR.

Area of Review (AOR) map

Figure B-1 is the AOR Map indicating all dry holes, producing wells and injections well in the 2-mile radius of the proposed well. The data was obtained from IHS Energy Group map service and indicates no additional wells in the AOR other than the wells found on Sun's property.

3. List of Property Owners

A list of surface property owners within 1/4 mile of the proposed Well 1A with mailing addresses is found in Table B-1.



TABLE B-1

As indicated in the table, the names of the persons are:

- | | | | |
|----|--|----|--|
| 1. | Total Petroleum
2000 Roy Road
Denver, CO 80201 | 9. | Michigan Department of Transportation
425 W. Edwards St.
Lansing, MI 48909 |
| 2. | James E. Peters
19800 Beverly Road
Birmingham, MI 48009 | | |
| 3. | Sanctuary
7540 Woodside Road
Romulus, MI 48174 | | |
| 4. | Eric & Cathrine Ewald
2775 Ecorse Road
Romulus, MI 48174 | | |
| 5. | Kenneth & Linda Ewald
38351 Maes Road
Westland, MI 48185 | | |
| 6. | Terice Brown, W.
32100 Telegraph Road
Birmingham, MI 48010 | | |
| 7. | Transamerica Leasing Inc.
100 Manhattanville Road
Purchase, NY 10577 | | |
| 8. | Edward Miller
28233 Ecorse Road
Romulus, MI 48174 | | |



Permit # MI-163-3G-A002

List of names & addresses of all landowners of record within 1/4 mile of the permit area located as follows : City of Romulus - SE/4 & NE/4 of the NE/4 of NE/4 of Section 12-T3S-R9E; City of Taylor - SW/4 & NW/4 of the NW/4 of NW/4 of Section 7-T3S-R10E, Wayne County, Michigan.

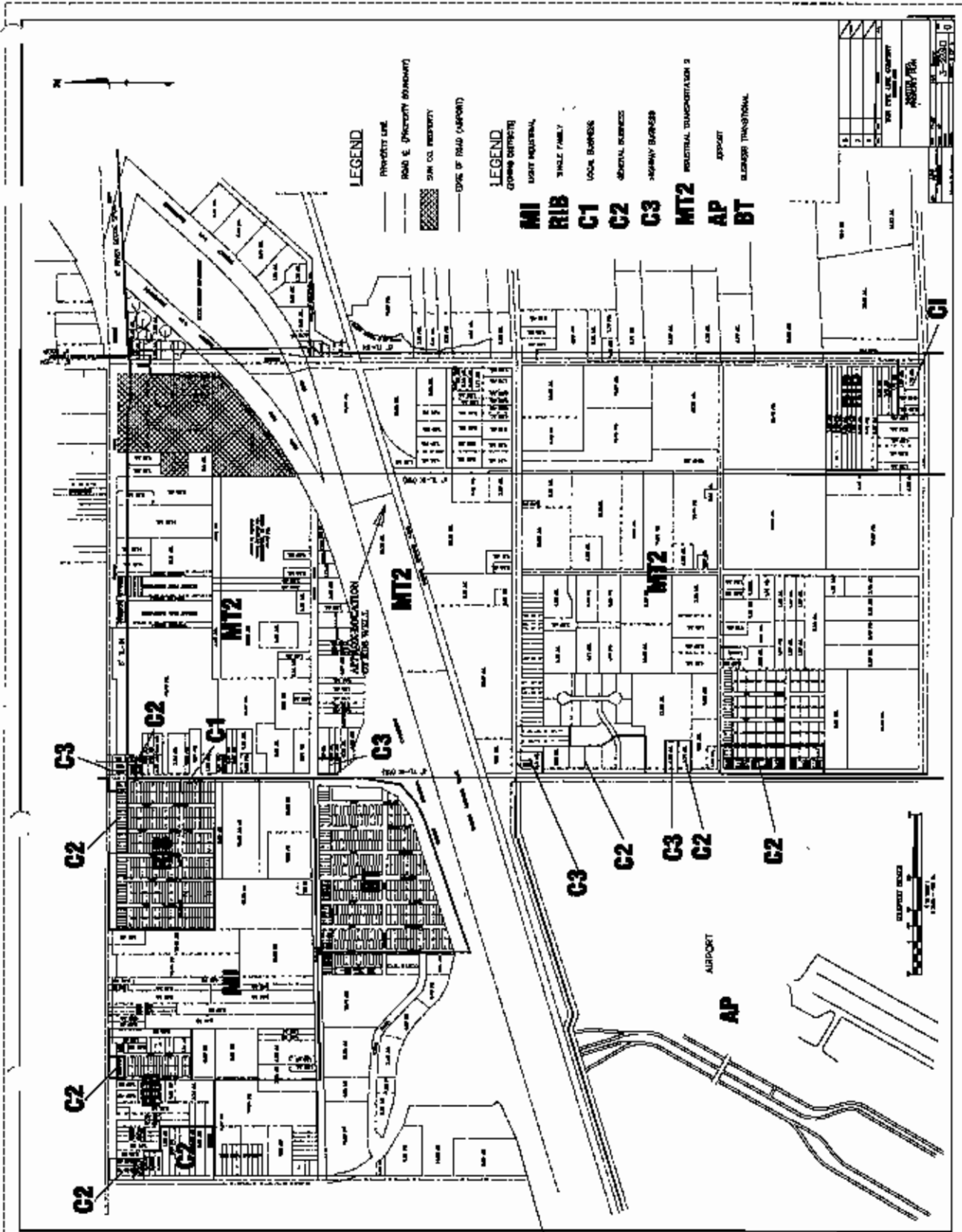
- | | |
|--|--|
| 1. Total Petroleum
P.O. Box 500
Denver, CO 80201 | 11. Elizabeth Lucille Dakota
5624 N. Creasy Springs Rd
Columbia, MO 65202-7034 |
| 2. James E. Peters
19800 Beverly Road
Birmingham, MI 48009 | 12. Crown Enterprises Inc.
12225 Stephens
Warren, MI 48089 |
| 3. Sanctuary
7540 Woodside Road
Romulus, MI 48174 | 13. Betty Sypula
28275 Smith Road
Romulus, MI 48174 |
| 4. Eric & Cathrine Ewald
27745 Ecorse Road
Romulus, MI 48174 | 14. Sarène Ostrosky-Miles
28301 Smith Road
Romulus, MI 48174 |
| 5. Kenneth & Linda Ewald
38351 Maes Road
Westland, MI 48185 | 15. Mary Lyons
28585 Smith Road
Romulus, MI 48174 |
| 6. Trerice Brown, W.
32100 Telegraph Road
Birmingham, MI 48010 | 16. Wendell Flynn
P.O. Box 74307
Romulus, MI 48174 |
| 7. Transamerica Leasing Inc.
100 Manhattanville Road
Purchase, NY 10577 | 17. J.A. Citrin Sons Company
28001 Citrin Drive
Romulus, MI 48174 |
| 8. Edward Miller
28233 Ecorse Road
Romulus, MI 48174 | 18. Eveann Properties
P.O. Box 1545
Southgate, MI 48195 |
| 9. Michigan Department
of Transportation
425 West Ottawa Street
Lansing, MI 48909 | 19. L.E. Rutherburg
2660 South Beech Daly Road
Inkster, MI 48141 |
| 10. Jihad Imad Farhat
29240 Ecorse
Romulus, MI 48174 | 20. Truman Gibbons
27330 Ecorse Road
Taylor, MI 48180 |

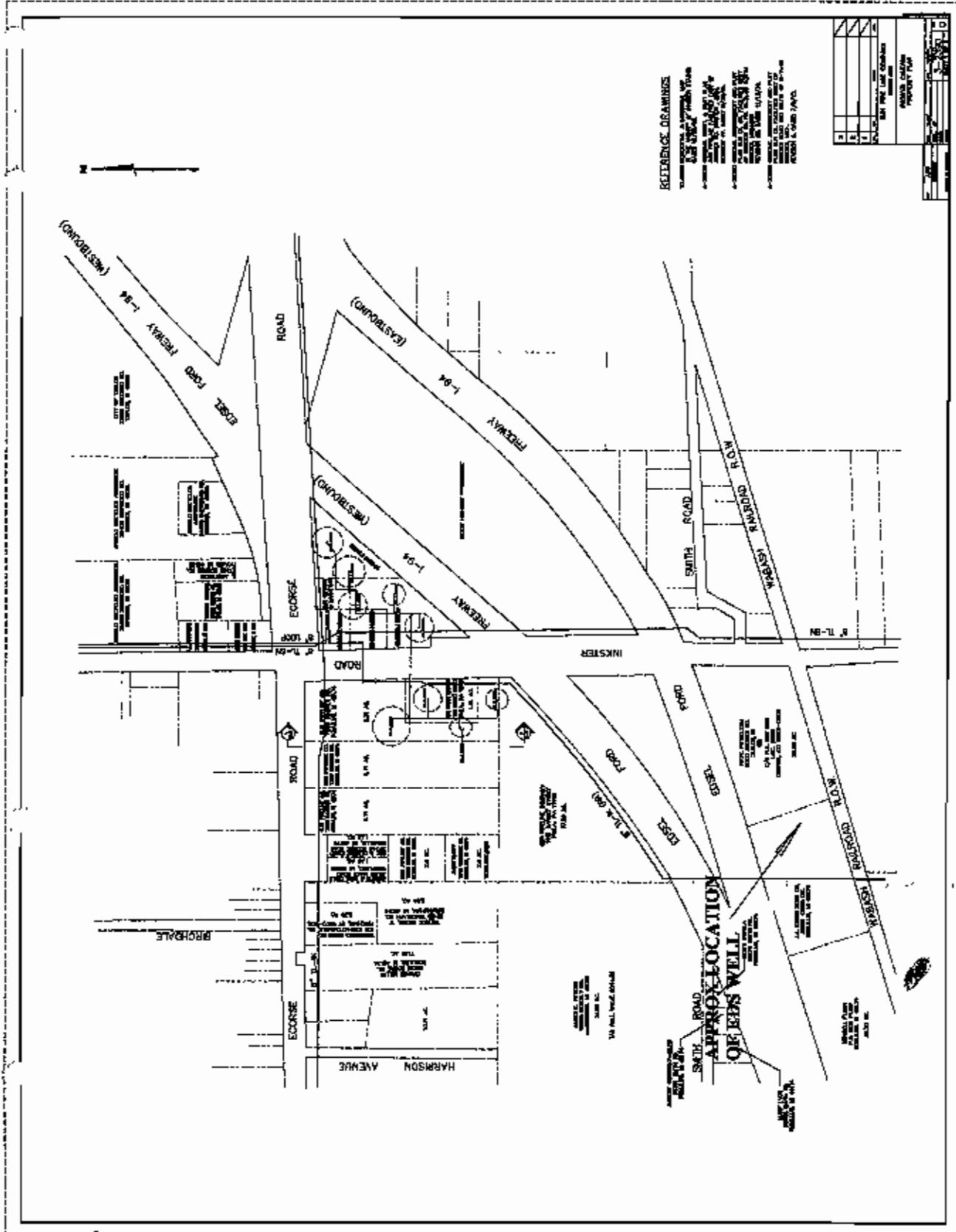
TABLE B-1

Page 2

Permit # MI-163-3G-A002

21. G. Anderson
27300 Ecorse Road
Taylor, MI 48180
22. Angelo Recycled Aggregate
26400 Sherwood Road
Warren, MI 48091
23. City of Taylor
23555 Goddard Road
Taylor, MI 48180





APPROXIMATE LOCATION OF BEES WELL

WATER MAIN
 12" DIA.
 10' DEPTH

GAS MAIN
 12" DIA.
 10' DEPTH

SEWER MAIN
 12" DIA.
 10' DEPTH

10' DEPTH

C. Corrective action plan
and well data – *Attached*

ATTACHMENT C

WELLS WITHIN A 2-MILE RADIUS OF PROPOSED WELL 1A

A tabulation of data available from public and company records on the wells found in the AOR is found in Table C-1. Fourteen wells are found in the 2-mile radius of the proposed well. All wells found are the caverns and brine disposal wells owned by Sun Pipe Line Company. Eight of the fourteen wells are storage caverns which are active, one cavern, Well No. 8, has been plugged. The remaining five wells were drilled by Sun for brine disposal into the Sylvania Sandstone during leaching of the caverns. These five wells have been plugged and abandoned. The total depth of the caverns range from 1288 ft to 1743 ft and of the brine disposal wells range from 545 ft to 559 ft. No wells in the AOR penetrate the Eau Clair/Mt. Simon disposal zone for the Proposed Well 1A. Therefore, no corrective action is required for this well.



TABLE C-1
 TABULATION OF DATA ON ALL WELLS IN THE AREA OF REVIEW
 SUN PIPE LINE - INKSTER TERMINAL

Well No.	Operator	Type	Total Depth	Date Drilled	Completion Record					Plugging Record			Remarks
					Type	Size (in.)	Depth (ft)	Cement Sacks	Interval (ft)	Volume of Cement	Status		
1	Sun Pipe Line Co.	Storage Cavern	1295	1952	Surface LS	13-3/8 8-5/8	122 1193	125 224			Active		
2	Sun Pipe Line Co.	Storage Cavern	1296	1954	Surface LS	13-3/8	252	125			Active		
3	Sun Pipe Line Co.	Storage Cavern	1288	1954	Surface LS	13-3/8 8-5/8	220 1194	130 350			Active		
4	Sun Pipe Line Co.	Storage Cavern	1743	1957	Surface LS	16 10-3/4	240 1570	235 800			Active		
5	Sun Pipe Line Co.	Storage Cavern	1733	1959	Surface LS	16 10-3/4	240 1540	600 800			Active		
6	Sun Pipe Line Co.	Storage Cavern	1287	1962	Surface LS	16 10-3/4	254 1181	Surface Surface			Active		
7	Sun Pipe Line Co.	Storage Cavern	1732	1966	Surface LS	13-3/8 10-3/4	258 1507	400 800			Active		
8	Sun Pipe Line Co.	Storage Cavern	1282	1970	Surface LS	16 10-3/4	225 1165	950 600	1126'-1125' 1125'-Surface	530	Plugged 1988		
9	Sun Pipe Line Co.	Storage Cavern	1725	1973	Surface LS	16 10-3/4	247 1498	550 755			Active		
1	Sun Pipe Line Co.	Brine Disposal	559	1952	Surface LS	10-3/4 7	110 415	85 50	230' to Surface	65	Plugged 1973		
2	Sun Pipe Line Co.	Brine Disposal	557	1954	Surface LS	10-3/4 8-5/8	118 410	Pulled 30	557' to Surface	200+	Plugged 1989		
3	Sun Pipe Line Co.	Brine Disposal	557	1954	Surface LS	10-3/4 8-5/8	114 407	Pulled 30	557' to Surface	350	Plugged 1991		
4	Sun Pipe Line Co.	Brine Disposal	560	1959	Surface LS	16 10-3/4	120 392	200 350	560' to Surface	450	Plugged 1989		
5	Sun Pipe Line Co.	Brine Disposal	545	1973	Surface LS	16 10-3/4	240 423	635 200	560' to Surface	408	Plugged 1989		

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING PO BOX 30473, LANSING MI 48909-7973

INTERNET www.deq.state.mi.us

TELEPHONE 313-373-3000

REPLY TO

GEOLOGICAL SURVEY DIVISION
735 E HAZEL ST
PO BOX 30258
LANSING MI 48909-7756

August 31, 2001

Mr. Johnathan O. Ojany
Regional Engineer Projects
Sun Pipeline Company
7155 Inkster Road
Taylor, MI 48180

Dear Mr. Ojany:

SUBJECT: Well in Section 11, T3S, R9E, Wayne County, Michigan

As you requested during our telephone conversation on August 30, 2001, I have searched the electronic databases of well information for an oil or gas Part 615, Supervisor of Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); or Part 625, Mineral Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) in the above location. I found no wells of either kind.

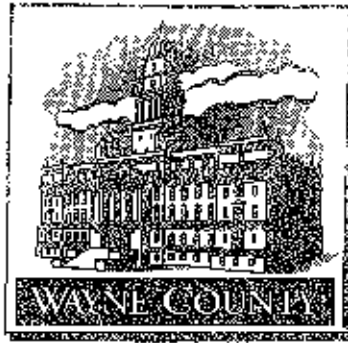
I hope this is useful.

Sincerely,

A handwritten signature in black ink that reads "Raymond Vugrinovich".

Raymond Vugrinovich
Senior Geologist
Minerals and Groundwater Unit
Geological Survey Division
517-334-6937

*Original marked to
Guthrie 1/20/01*



August 24, 2001

Jonathan O. Ojany
Sun Pipe line Company
7155 Inkster Rd.
Taylor, Mi 48180

Re: FREEDOM OF INFORMATION ACT REQUEST NO. EH-2001-181 DATED AUGUST 20, 2001

Dear Mr. Ojany:

The records you requested regarding 7155 Inkster Road, Taylor Mi 48180 are enclosed.

As for the other records you requested, after a diligent search for the requested records, I have determined and certify the records do not exist. Therefore, your request is denied.

You have the right to do either of the following:

- 1) Submit a written request to the County Executive, which specifically states the word "appeal" and states the reason or reasons the denial should be reversed.
- OR**
- 2) Commence an action in the circuit court to compel disclosure. Should you prevail, you will be entitled to have reasonable attorneys' fees, costs and disbursements assessed against the County by the court. If you or the County prevails in part, the court may, in its discretion, award you all or an appropriate portion of reasonable attorneys' fees, costs and disbursements. If the court determines that the County has been arbitrary and capricious in its denial, you will be entitled to, in addition to actual damages, punitive damages in the amount of \$500.00.

Sincerely,

Michael E. Wiacck
Michael E. Wiacck
Department Manager

DENIAL APPROVED:

Eric J. Gornick
Assistant Corporation Counsel

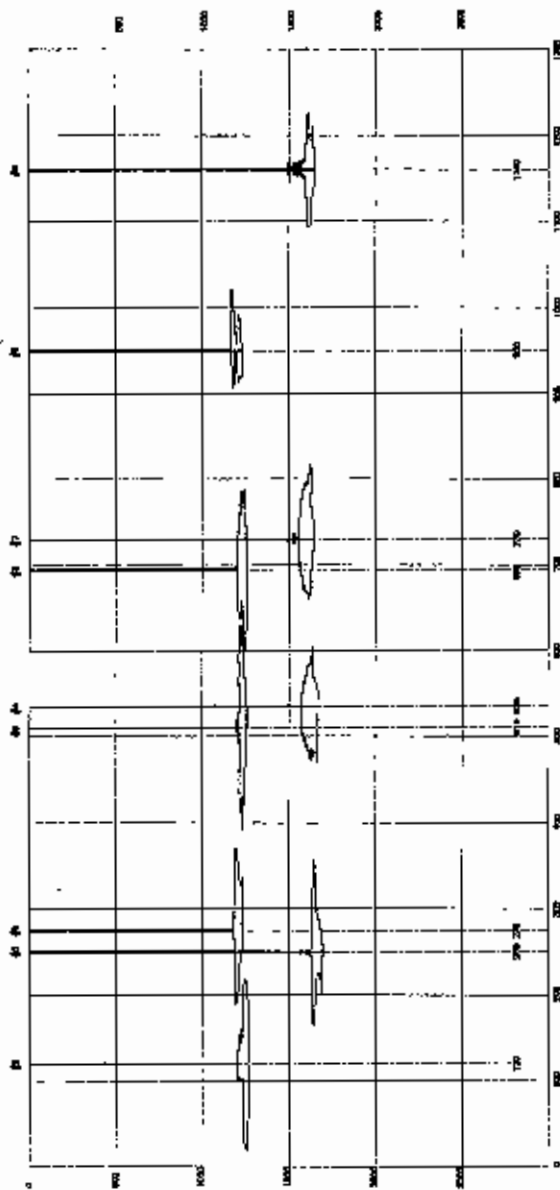
8/29/01
Date

Enclosures

cc: Suzanne Hall, FOIA Coordinator

(a:FOIA) art denial grant Nofee

D. Maps and cross section of
USDW – *Attached*



SHELL A-A, LIDJONG EAST

DATE: 1-1-50

WELL INFORMATION SHEET FOR
WELL & WELL LOGS

1	2	3	4	5	6	7	8	9	10
WELL INFORMATION SHEET									
DATE: 1-1-50									
WELL NO.:									
WELL NAME:									
WELL TYPE:									
WELL STATUS:									
WELL DEPTH:									
WELL DIAMETER:									
WELL LOCATION:									
WELL OPERATOR:									
WELL NUMBER:									

UNDERGROUND SOURCE OF DRINKING WATER (USDW)

The USDW is assumed to be above the top of the Detroit River Formation. This can be found at about 220 feet at the location of the nearest well to the proposed location, cavern # 9. The USDW formations include the Dundee limestone and the glacial drift in this area. Although information on the direction of ground water flow was not available, structure maps of the formations underlying the glacial drift would indicate a ground water movement to the north and northwest towards the center of the Michigan basin. Waters in the glacial drift would likely follow topography and / or well withdrawal since they are water table type aquifers. In Wayne County, the glacial drift ground waters would tend to move towards the southeast.

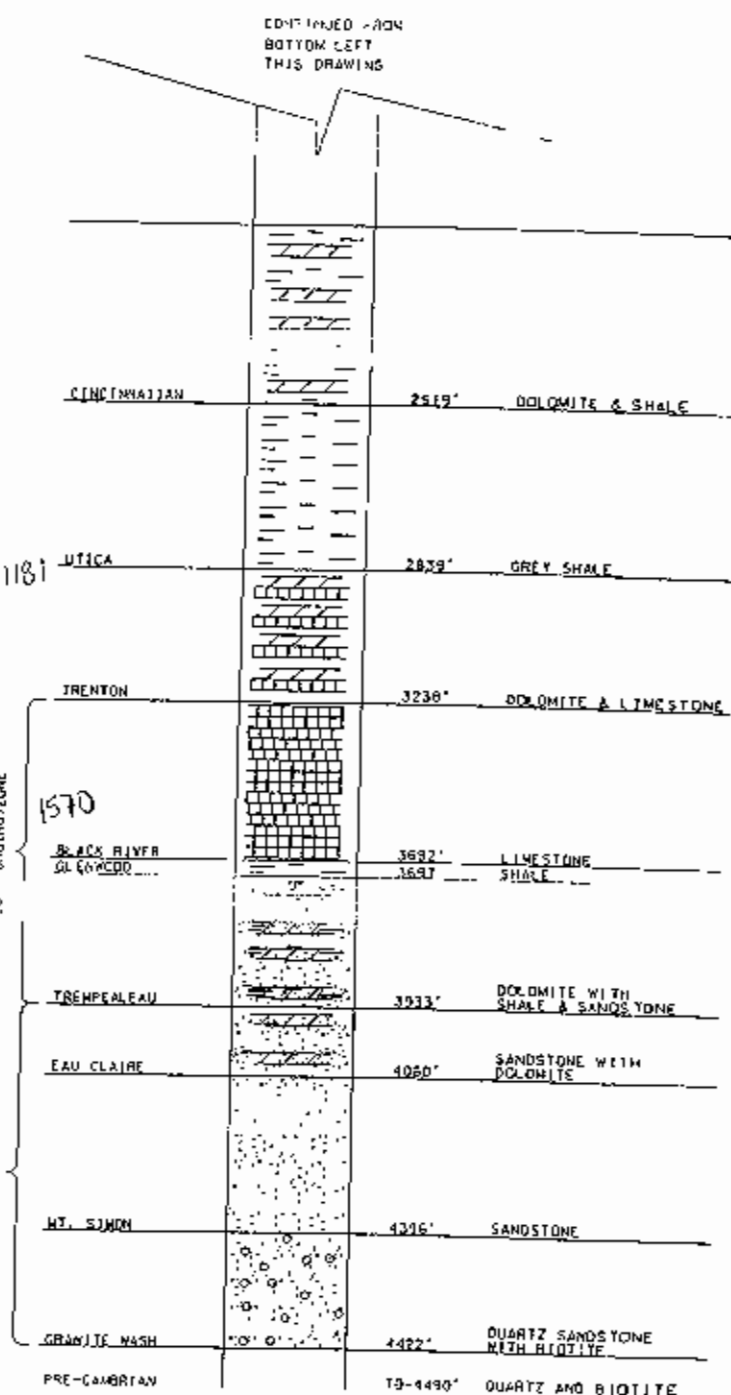
The Dundee limestone is likely a water table type aquifer being recharged in the outcrop area to the south and through the overlying glacial drift. The Detroit River dolomite outcrop area to the south and east of the site is likely recharge zone for this formation. Since the top of the Detroit River dolomite is typically a shaley member the Detroit River and the Dundee are probably not hydrologically connected in the subsurface. This is no evidence to support the existence of any ground water resources in the Detroit River formation.

The base of the Dundee formation is considered to be the base of the lowermost USDW in this area.

The Detroit municipal water system supplies potable water to this area. No wells were found in the area of review from public records reviewed (see Wayne County Health and Michigan Department of Environmental quality correspondences). Older wells may have been drilled at old farmhouses that existed before this area became urban.

REFERENCES: Excerpts from PB-KBB report 07/01/2000

FORMATION	DEPTH 13'	GENERAL DESCRIPTION
GLACIAL DRIFT	89'	SHALE, SAND, & GRAVEL
OLANOE	220'	LIMESTONE BASE OF JASON
DETOIT RIVER	420'	DOLOMITE
BOIS BLANC	729'	SANDY DOLOMITE
BASS ISLAND	911'	GREY/TAN DOLOMITE
SALINA "G" UNIT	1149'	DOLOMITE WITH ANHYDRITE
"E" UNIT	1261'	DOLOMITE
"D" UNIT	1296'	SALT WITH DOLOMITE
"C" UNIT	1384'	SHALE WITH ANHYDRITE
"B" UNIT	1422'	SHALE WITH ANHYDRITE
	1662'	SALT WITH ANHYDRITE INTERBEDDED
2-111-CONSERVATIVE	1776'	ANHYDRITE & DOLOMITE
A-2 UNIT ANHYDRITE	1834'	ANHYDRITE
A-1 UNIT CARBONATE	1930'	DOLOMITE
NIAGARAN	2122'	BROWN/WHITE DOLOMITE
CLINTON	2146'	GREY DOLOMITE
CABOT HEAD	2275'	RED/GREENISH SHALE
WENLOQUIN	2258'	WHITE DOLOMITE



CONTINUED FROM
BOTTOM LEFT
THIS DRAWING

CONTINUED ON
TOP RIGHT
THIS DRAWING

- NOTE:
1. STRATIGRAPHY FROM ENVIRONMENTAL DISPOSAL SYSTEM, INC WELL NO. 1
 2. ALL DEPTHS FROM KB 113'.

FIGURE F-5

LEGEND

- SAND
- SHALE
- SALT
- DOLOMITE
- LIMESTONE
- ANHYDRITE

PB-KBB Inc.
Engineering Construction Operations
17757 KATY FREEWAY #600
HOUSTON, TEXAS 77079

SUN PIPE LINE COMPANY
INKSTER FACILITY

GENERAL GEOLOGICAL STRATIGRAPHY SECTION

DESIGN: D.	DRAWN: JOT	CHECKED: Ws	DATE: 7/20/95	SCALE: NONE
------------	------------	-------------	---------------	-------------

DRAWING No.
904 04-003

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET www.deq.state.mi.us

TELEPHONE 313.487.2100, 1-800-255-7266

REPLY TO:

GEOLOGICAL SURVEY DIVISION
735 E HAZEL ST
PO BOX 30256
LANSING MI 48909-7756

August 31, 2001

Mr. Johnathan O. Ojany
Regional Engineer Projects
Sun Pipeline Company
7155 Inkster Road
Taylor, MI 48180

Dear Mr. Ojany:

SUBJECT: Well in Section 11, T3S, R9E, Wayne County, Michigan

As you requested during our telephone conversation on August 30, 2001, I have searched the electronic databases of well information for an oil or gas Part 615, Supervisor of Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); or Part 625, Mineral Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) in the above location. I found no wells of either kind.

I hope this is useful.

Sincerely,

A handwritten signature in black ink that reads "Raymond Vugrinovich".

Raymond Vugrinovich
Senior Geologist
Minerals and Groundwater Unit
Geological Survey Division
517-334-6937

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7873

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO

GEOLOGICAL SURVEY DIVISION
735 E HAZEL ST
PO BOX 30258
LANSING MI 48909-7758

August 31, 2001

Mr. Johnathan O. Ojany
Regional Engineer Projects
Sun Pipeline Company
7155 Inkster Road
Taylor, MI 48180

Dear Mr. Ojany:

SUBJECT: Well in Section 11, T3S, R9E, Wayne County, Michigan

As you requested during our telephone conversation on August 30, 2001, I have searched the electronic databases of well information for an oil or gas Part 615, Supervisor of Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); or Part 625, Mineral Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) in the above location. I found no wells of either kind.

I hope this is useful.

Sincerely,

A handwritten signature in black ink that reads "Raymond Vugrinovich". The signature is written in a cursive style.

Raymond Vugrinovich
Senior Geologist
Minerals and Groundwater Unit
Geological Survey Division
517-334-6937

Original mailed to
Gardner 8/30/01



August 24, 2001

Jonathan O. Ojany
Sun Pipe line Company
7155 Inkster Rd.
Taylor, MI 48180

Re: FREEDOM OF INFORMATION ACT REQUEST NO. EH-2001-181 DATED AUGUST 20, 2001

Dear Mr. Ojany:

The records you requested regarding 7155 Inkster Road, Taylor Mi 48180 are enclosed.

As for the other records you requested, after a diligent search for the requested records, I have determined and certify the records do not exist. Therefore, your request is denied.

You have the right to do either of the following:

- 1) Submit a written request to the County Executive, which specifically states the word "appeal" and states the reason or reasons the denial should be reversed.

OR

- 2) Commence an action in the circuit court to compel disclosure. Should you prevail, you will be entitled to have reasonable attorneys' fees, costs and disbursements assessed against the County by the court. If you or the County prevails in part, the court may, in its discretion, award you all or an appropriate portion of reasonable attorneys' fees, costs and disbursements. If the court determines that the County has been arbitrary and capricious in its denial, you will be entitled to, in addition to actual damages, punitive damages in the amount of \$500.00.

Sincerely,

Michael E. Wiacek
Department Manager

DENIAL APPROVED:

Assistant Corporation Counsel

8/29/01

Date

Enclosures

cc: Suzanne Hall, FOIA Coordinator

(a:FOIA) art denial grant Nofee

SUN PIPE LINE COMPANY

EH # 01-181
DATE DUE 8-27

FACSIMILE TRANSMITTAL SHEET

TO: MATT KOBYLARZ	FROM: Jonathan O. Ojany
COMPANY: Wayne County Environmental Health Dept.	DATE: 08/20/01
FAX NUMBER: (734) 727-7421	TOTAL NO. OF PAGES INCLUDING COVER: Four (4)
PHONE NUMBER: (734) 727-7400	SENDER'S TELEPHONE NUMBER: (313) 292-9822
RE: Request for information of existing wells in Romulus Township	SENDER'S FAXNUMBER: (313) 292-3447

URGENT FOR REVIEW PLEASE COMMENT PLEASE REPLY PLEASE RECYCLE

Per the voice message left Monday August 20, 2001, SUN PIPE LINE COMPANY is kindly requesting information on any and all wells located within a two mile radius of our facility at 7155 Inkster Road, Taylor, MI 48180. This is at the south East corner of Inkster and Ecourse Roads within the cities of Taylor and Romulus, MI. SPL is interested in the characteristics (depth, diameter, uses etc) and status (operational, abandoned, plugged) of any wells in this area including water wells.

Specifically, we are aware of a well located off Kempa Road (8338 Kempar Road), off Smith Road, west of Middlebelt Road, north of I-94 and south of Inkster Road (see attached map).

Please give me a call at (313) 292-9822 and let me know whether you have ANY information on the wells in this area and particularly on the one off Kempa Road.

Thank you for your assistance in this matter. Due to the urgency of this request, your prompt response is GRATELY appreciated.

Jonathan O. Ojany
Regional Engineer - Projects
Sun Pipe Line Company

REQUEST TO
PLEASE FAX
ANY RECORDS
FOUND TO:

fax #
313-292-3447

Assien Response:

FOR et al Requester
response to the Kempa/Smith
and well even though it fell within the 2 miles radius

7155 INKSTER ROAD, TAYLOR, MI 48180

60-018-99-0011-000

54.
58738007006

7-35-108
Taylor Trp., (Wayne Co.)

FD 1296 in Salina
L. P. G. Storage

Sum Oil Company

Sum-Lester Junction No. 2

Permit No. 19044 ✓

Drilling Contractor: Union Rotary Corporation (Rotary)

Location: NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 7, T 3S, R 10E
324' from north and 745' from west line of quarter section

Elevation: 633.2 feet above sea level (sig fl.) (Use): 635.0 feet (rot. bush.)

Record by: ⁶²⁷ B. L. Champion from driller's log

	Thickness (Feet)	Depth (Feet)
PLEISTOCENE:		
Drift:		
Drift	111	111
DEVONIAN:		
Traverse-Dundee-Detroit River:		
Dolomite, white to buff & brown (Pre. Report- lost circulation 207)	312	423
Sylvania:		
Sand	147	570
Bois Blanc:		
Dolomite, cherty & sandy	75	645
SILURIAN:		
Bass Island-Salina:		
Dolomite, white to buff & brown with traces of black shale & anhydrite	306	951
Salt & shale with minor amounts of dolomite	239	1190
Dolomite	13	1193
Dolomite & salt	4	1197
Dolomite	3	1200
Salt	26	1226
Dolomite & salt	3	1229
Dolomite	2	1231
Salt with few lime stringers	33	1269
Lime & salt streaks	1	1270
Salt, few impurities	13	1283
Lime, salt stringers	6	1289
Lime, dolomite, shale & small streaks salt (cored 1180-1295) (Pre. Report-wash out salt at TD)	7	1296
	(551+)	

TOTAL DEPTH 1296

Casing Records:
 13 3/8" 258' (125 coa)
 8 5/8" 1194' (360 ")
 7" 1234'
 4 1/2" 1288'

Commenced: 5-19-34
 Completed: 6-3-34
 Initial Production: L.P.G. Storage Reservoir

60-011-8-0011-000

80738007007

7-33-10E
Taylor Twp., (Wayne Co.)TD 557 in Sylvania
Brine disposal well

Sun Oil Company

Sun-Inkster Disposal No. 3

B.D. No. 95

Drilling Contractor: Union Rotary Corporation (Cable)

Location: SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 7, T 33, R 10E
920' from north and 213' from west line of quarter section

Elevation: 632.6 feet above sea level

626

Record by: B. L. Champion from driller's log

	Thickness (Feet)	Depth (Feet)
PLEISTOCENE:		
Drift:		
Drift	118	118
DEVONIAN:		
Traverse-Dundee-Detroit River:		
Lime & shales	44	162
Lime & gypsum (water 132-72)	181	343
Lime, brown	74	417
	(299)	
Sylvania: (Pra. Report-top Sylvania 412)		
Sand, white (water)	140	557
	(140+)	
	TOTAL DEPTH	557

Note: Lost 1st hole at 139; skidded rig 10' south & re-spud 5-1-54.

Casing Record:

10" 118'

8 3/4" 410' (30 cas)

Commenced: 5-25-54

Completed: 5-11-54

Initial Production: Brine disposal well

10-19-54

60-018-99-0011-000

7-35-102
Taylor Twp., (Wayne Co.)

TD 1288 in Salina
L. P. G. Storage

Sun Oil Company

82
738007002

See Intersect Junction No. 3

Permit No. 19043

Drilling Contractor: Union Rotary Corporation (Rotary)

Location: SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 7, T 35, R 10E
820' from north and 214' from west line of quarter section

Elevation: 633.4 feet above sea level
(26)

Record by: B. L. Champion from driller's log & core descriptions submitted by company

	Thickness (Feet)	Depth (Feet)
PLEISTOCENE:		
Drift:		
Drift	115	115

DEVONIAN:		
Traverse-Dundee-Detroit River:		
Lime & gypsum (lost circulation 207; cemented; drilled ahead with partial returns to 8 5/8" casing point)	306	421

Sylvania:		
Sand, white (water)	143	566

DEVONIAN-SILURIAN:		
Bois Blanc-Bass Island-Salina: (Pre. Report-top Bass Island 617)		
Lime	284	850
Lime & shale	83	933
Lime & salt	243	1176

(Core #1, 1176-1221 - recovered 45')

Dolomite, brown	5'3"	
Dolomite, gray, shaly	1'5"	
Lime, gray	1'11"	
Dolomite with salt crystals	4'0"	
Lime, shaly	2'7"	
Salt, clear	25'1"	
Dolomite, brown	1'3"	
Dolomite, limy with salt stringers	3'6"	1221

(Core #2, 1221-1265 - cut 44' & lost 3'5" of Core #2) (Recovered with same with Core #3)

Dolomite, limy	5"	
Salt with lime stringers, average 1/8" to 4" thick; lime partings with lime impurities throughout		
core	40'3"	
Lime stringer	5"	
Salt with lime impurities	3'4"	
Lime, gray with salt nodules	5"	1265

60-018-99-3011-000

Liquid Petrol
Gas Storage
TD 1743 in (7-3S-10E
Taylor Twp. (Wayne Co.)

Sun Oil Co.

82738007003

Sun Inkster Junction No. 4

Permit No. 2

20404

Drilling Contractor: Gordon Drilling Co. (Rotary)

Location: SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 7, T. 3S, R. 10E
680 feet from North and 420 feet from West line of quarter section.

Elevation: 633 feet above sea level (rig fl.)

Record by: ⁶²⁶B. L. Champion from sample log and core descriptions submitted
by the Company.

	Thickness (Feet)	Dep (Feet)
PLEISTOCENE:		
Drift: (Pre Report - Drift to 90)		
Drift	118	1
DEVONIAN:		
Traverse - Dundee - Detroit River: (Pre Report - Top Traverse 115, Top Dundee 136)(Possibly Sylvania in Lower Part):		
Limestone, buff, dolomitic, fossiliferous, fragments grade to limy granular dolomite & points. All heavily oil stained, sulphur oil odor.	41	15
Dolomite, light brown, very finely crystalline, thoroughly oil stained, sulphur oil odor	21	18
Dolomite, cream color, buff, very finely crystalline, anhydritic at points, some staining, also some yellow crystalline sulphur	17	19
Dolomite, light brown to buff cream color, very finely crystalline, vuggy porosity	4	20
Dolomite, light brown to buff, finely crystalline, heavily oil stained	3	204
Dolomite, light brown to cream, very finely crystalline, dense	10	214
Dolomite, light gray to buff, cream, very finely crystalline, anhydrite at points, broken, dense, vuggy porosity	31	245
Dolomite, light brown, very finely crystalline to dense	21	266
Dolomite, light buff cream	10	276
Anhydritic	29	305
Dolomite, light buff to cream, very finely crystalline to dense	47	352
Dolomite, brown, crystalline, increase porosity	8	360
Dolomite, light gray buff, little limy	119	479
	(361)	
Sylvania: (Pre Report - Top Sylvania 420)		
Sand, gray to white, hard (Little Tripolitic chert 480-485)	62	547
Dolomite, gray, sandy	8	555
	(76)	
Sais Blancs:		
Dolomite, gray, abundant chert, dark gray and gray (Pre Report - chert 559)	21	576
Dolomite, gray, dense	25	599
	(46)	

60-018-55-0011-000

NO LOG FILED

80738007004

7-35-10E
Taylor Twp. (Wayne Co.)
Sun Oil Company

TD 560 in Sylvania
SDW

Sun Inkster Brine Disposal No. 4

Permit No. ED-1

Drilling Contractor: Union Rotary Corporation (Rotary)

124

Location: NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 7, T. 35., R. 10E.
255' from North and 910' from West line of quarter section

Elevation: 650 feet above sea level (rot. bush.)

Record by: ⁶²⁵ S. L. Champion from driller's log

FOR FORMATION RECORD, REFER TO OTHER INKSTER WELLS

TD 560

Casing Record:

16" 120' (200 cement)
10 3/4" 392' (350 cement)

Commenced: 7-3-59

Completed: 7-6-59

Initial Production: Brine disposal well

Treated: 7-8-59 from 392-559 with 1000 gallons.

PA 1989

450SX - 0-560'

10-14-59

7-3S-10E
Taylor Twp. (Wayne Co.)

TD 1735 in Salina
LPG Storage

Sun Oil Company

Sun Inkstar Junction No. 5

Permit No.
21521

Drilling Contractor: Union Rotary Corp. (Rotary)

Location: NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 7, T. 3S., R. 10E.
420' from North and 570' from West line of quarter section

Elevation: 635 feet above sea level (rot. bush.)

Record by: E. L. Champion from scout report and core descriptions submitted by the company

PLEISTOCENE-DEVONIAN:

Drift-Traverses:

No record (water in drift 92-96)

Thickness
(feet)

120

DEVONIAN:

Dundee-Detroit Rivers

No record (water in Dundee 120-124)

302

Sylva

"Sylva" (water 420-500)

140

Bois Blanc

"Bois Blanc"

79

SILURIAN:

Base Island-Salina

No record (Pre. Report-First salt at 130)

350

Core #1 1530-1560 Recovered 49.7'

Salt, pure with 1" anhydrite stringers at 1535

Dolomite, very anhydritic

10 1"

Salt, pure

1 2"

Salt, impure

13

Dolomite, with wavy banded anhydrite throughout

5 5"

Salt, impure (30% dolomite)

2 8"

Dolomite, with 30% salt nodules

1 7"

Dolomite, gray to light brown

3 10"

Salt, impure

1 10"

158

Core #2 1580-1631 Recovered 51.5'

Salt, impure with thin dolomite stringers 2" to 4" thick at 1580, 1585, 1586, 1589.5'

15 9"

Dolomite, light brown to gray, fractured

1

Salt, impure

1

Dolomite

1

Salt, impure

1

Dolomite

1

Salt, impure

1

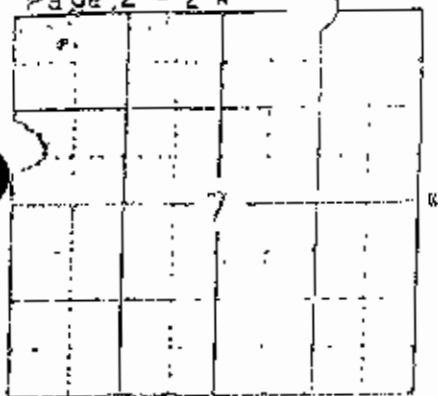
Dolomite

1

Salt, impure

1

112



LOG OF OIL, GAS OR TEST WELL

TO BE FILED WITH SUPERVISOR OF WELLS WITHIN 30 DAYS
AFTER COMPLETION OF WELL (ACT 81 P. A. 1938
AND ACT 328 P. A. 1937)

Permit No. 80-125 Deepening No.

Owner or Operator Sun Oil Company

Address P. O. Box 920, Toledo, Ohio 43693

Well No. 5 Farm Sun Inkster Junction

Township Taylor County Wayne

Location NW 1/4 of NW 1/4 of NW 1/4 Sec. 7 Twp. 3S Range 10E Elevation 629.00

Footage 330 ft. from North line and 575 ft. from West line of quarter section

Type of well Brine Disposal Total depth 545 Completed in Sylvania
(OIL, GAS, BRINE DISPOSAL, DRY HOLE)

Name of producing formation Top of formation

Date drilling begun 3-8-73 Date drilling completed 3-19-73 Date well completed 3-19-73

Drilling contractor North American Address Mt. Pleasant, Michigan

WATER ZONES

OIL OR GAS ZONES

DEVIATION SURVEY

NAME	FROM	TO	AMOUNT	HAZARD	FROM	TO	AMOUNT	RUN AT	DEGREES
Sylvania	421	545							

CASING AND CEMENTING

STEEL LINES RUN

SIZE	WHERE SET	CEMENT	AMT. PULLED	RUN AT	CORRECTED TO	RUN BY
16"	240	635 SKS				
10 3/4"	421	200 SKS				

PERFORATIONS

ACID OR SHOOTING RECORD

DATE	FROM	TO	NO. HOLES	DATE	FROM	TO	GALS. ACID OR 2% NITRO

Rotary tools from 0 feet to 545 feet. Cable tools from feet to feet.

Natural initial production first 24 hours Bbls. After acid or shot Bbls.

gas well, cu ft. per 24 hours Rank pressure lbs per sq in.

The above information is complete and correct

Signed Dale E. Stiles

Dale E. Stiles

Date 3-28-73

Title Associate Project Engineer

60-014-0001-000

8013800700

Taylor Sw. (Wayne Co.)

TD 1295 in Salina
Liquid Pe
Storage W

Sun Oil Company

Sun Inkster Junction No. 1

Permit No. 17574

Drilling Contractor: Union Rotary Corporation (Rotary)

Location: NW 1/4 NW 1/4 NW 1/4 Section 7, T. 3S, R. 10E
450' from north and 350' from west line of quarter section

Elevation: 632.2 feet above sea level (rig. fl.): 628.7 feet (ret. base.)

Record by: From log & core descriptions submitted by company

PLEISTOCENE:

Drift:
Drift

Thickness Ser
(feet) (Log
110 110

DEVONIAN:

Artia - Traverse:

Shale, black, brown, buff & white dolomite, calcite: white, small amount chert, white to buff, quartz, glauconite, few crinoid stems 7 117

Dundee - Detroit River: (Pec. report - top Dundee eroded)

Dolomite, white, crystalline, or smaller dolomite, buff, sub-crystalline 8 124

Dolomite, white to siliceous, granular, some oil stain, along surface line, very porous (much of surface discolored; slight show oil & gas 20-25) 10 135

Dolomite, buff, granular, some dolomite, white, crystalline: some dolomite, buff, subcrystalline with round grains in patches of soft calcite; small amount limestone, white, trace white chert 25 140

Dolomite, buff, discolored at top, brown, porous: some dolomite, buff, subcrystalline dolomite, white, crystalline, some calcite crystals 45 155

Dolomite, buff to light brown, granular (slight oil stain); dolomite, buff, subcrystalline; calcite crystals; trace gray & black shale, one crinoid stem 70 170

Dolomite, buff to light brown, granular: some dolomite, white, crystalline; calcite crystals; trace black shale, gray shale & glauconite 10 180

Dolomite, white to buff, subcrystalline, argillite, crystals, clear to white ("brown argillite"); dolomite, white, crystalline; small amount dolomite, light gray, subcrystalline; argillaceous, dolomite, buff, granular; trace shale, black 10 185

Dolomite, buff to brown, granular (some oil stain) dolomite, white to buff, subcrystalline; small amount of shale, black; crystallized crinoid stems; small amount clear hydrite crystals, trace pyrite; small amount dolomite, light gray, argillaceous 105 195

Dolomite, brown, granular, porous (oil stain) dolomite, buff, subcrystalline, trace chert, white, argillite, white, clear trace shale, black 30 225

Dolomite, white to buff to light brown, granular; dolomite, buff, subcrystalline; trace hydrite crystals, argillite, white, soft, clear white to buff; trace shale, black 10 230

Sylvian:

Shalestone, siliceous, unsorted grains of quartz, few rounded, chert-fragmented, chert cementing material to dolomite, soft,

10-045-99-0007-00

12-38-9E
Romulus Twp. (Wayne Co.)
Sun Oil Company

Facility
TD 1287 in Salina
LPG Storage
31757912002

Sun Oil Co. No. 6

Permit No. 23456

Drilling Contractor: Union Rotary Corp. (Rotary)

Location: NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 12, T. 38., R. 9E.
630' from North and 398' from East line of quarter section

Elevation: 635 feet above sea level (rot. bush.)
2 core *(in asterisk)*

Record by: B. L. Champion from sample tops and core descriptions submitted by the company

	Thickness (feet)	Depth (feet)
PLEISTOCENE:		
Drift:		
Drift	118	118
MISSISSIPPIAN-DEVONIAN:		
Antrim-Traverse:		
"Antrim-Traverse"	7	125
DEVONIAN:		
Dundee-Detroit River:		
"Dundee-Detroit River" (Water) (Pre. Report - lost circulation 216-218, cemented at 100)	300	425
Sylvania:		
"Sylvania" (Water)	135	560
Bois Blanc:		
"Bois Blanc"	60	620
SILURIAN:		
Bass Island:		
"Bass Island"	232	852
Salina:		
"Salina"	323	1175
(Core #1 1175-1200 Recovered 25')		
Dolomite, salt-filled, oolitic	1'	
Dolomite, gray, dense	2'6"	
Dolomite, brown, dense	5'	
Dolomite, gray, dense	2'	
Dolomite, brown	6"	
Dolomite, buff	4'7"	
Dolomite, gray, dense	3'5"	
Dolomite, buff with few fine salt nodules	3'5"	
Dolomite, buff to gray	3'2"	1200

80-045-17-0001-002

12-35-9E
Romulus Twp. (Wayne Co.)

L.P.G. (33)
TD 1732 in Salina (Facility)

Sun Oil Company

83037912002

Sun Oil Co.-Inkster Junction No. 7

Permit No. 26443

Drilling Contractor: North American Drilling Co. (Rotary 0-1732)

Location: SE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 12, T.35, R.9E
846 feet from North and 237 feet from East line of quarter section

Elevation: 633 feet above sea level (rot. bush.)

Record by: P. Caterino from Schlumberger log tops reported by company and co descriptions submitted by the company (1500-1732)

	Thickness (feet)	Depth (feet)
PLEISTOCENE:		
Drift:		
"Drift"	114	
DEVONIAN:		
Dundee:		
Limestone and dolomite	156	2
Detroit River:		
Limestone and dolomite (water @ 120-428)	158	4
Sylvania:		
Sandstone (water @ 428-590)	162	5
DEVONIAN - SILURIAN:		
Bois Blanc-Bass Islands:		
Limestone, shale and chert	202	7
SILURIAN:		
Salina:		
Limestone and shale	134	9
Limestone, dolomite and salt (first salt @ 926 Sj)	574	150
<u>Core #1</u> <u>1500-1561'</u> (<u>Recovered 61'</u>)		
Dolomite, light gray to light brown	6.5'	150
Dolomite, dark brown, with anhydrite nodules	3.0'	150
Salt, good grade, very low in solids	18.0'	152
Dolomite, light gray, with salt and anhydrite inclusions	10.7'	153
Salt, brown, with thin dolomite stringers, one inch thick throughout	17.7'	155
Dolomite, dark brown, slightly limy	5.1'	156
<u>Core #2</u> <u>1561-1620'</u> (<u>Recovered 59'</u>)		
Dolomite, dark brown	5.0'	156
Salt with 8 inches dolomite at 1569		
Limestone	1.5'	157
Salt, very dirty	18.0'	159
Limestone with shale streaks	1.4'	159
salt, dirty, with some limestone partings	12.4'	160
Limestone with salt nodules	1.5'	160
Salt, dark brown, dirty	7.1'	161
Dolomite with shale streaks	1.9'	161
Salt with limestone nodules at 1620	2.7'	162

E. *N/A*

N/A

F. Maps and cross section of
geologic structure of area –
Attached

**SECTION 3.0
LITHOLOGY**

3.1 Area Lithology

Sun's Inkster terminal is located in the southeast part Michigan basin on the west flank of the Findlay arch. The Findlay arch separates the Allegheny basin of Ohio and New York from the Michigan basin. The major formations of the Michigan basin are either thin or truncated on top of the arch and then thicken into the Allegheny basin.

The lithology in the area of the facility is taken from stratigraphy identified by the Allied Well No. 1 located about 10 miles to the east of the facility and the EDS, (Environmental Disposal Systems) Romulus Well No. 1 located about 4.5 miles to the southwest of the facility. The formations generally dip to the west, northwest and thicken down dip into the basin. Figure 3-1 is a regional geological map of the basin in Michigan with a cross section B-B' from the southeast side of the basin, overlapping onto the Findlay Arch to the northwest side of the basin. The stratigraphy of the Allied Well No. 1 is found in Figure 3-2 and of the EDS well is found in Figure 3-3. Site specific stratigraphy above the salt is taken from Sun's wells and is found as Figure 3-4.

The deepest formations identified in the area are the pre-Cambrian granites of the basement rocks of the Central Stable Region or Canadian Shield, which forms the stable core of the North American Continent. Overlying the granite in some areas is a granite wash, or a sandstone made up of the weathered, underlying granite. Although the granite wash is not generally reported in wells of this area, it was found in the EDS well. The granite wash was reported to be about 26 feet thick with the top at 4396 feet below the land surface. The pre-Cambrian was found at 4422 feet in this well.

Overlying the pre-Cambrian or granite wash is the Mt. Simon Sandstone. The sandstone is reported to be 338 feet thick in the EDS well. The Allied No. 1 did not fully penetrate the sandstone to provide a thickness. The sandstone is characterized by sub-rounded to rounded quartz grains that are generally coarse and range from medium to very coarse. Generally, the sand is cemented with silica and contains little or no glauconite. In some areas, glauconite, anhydrite and green shale are present in minor amounts with local dolomite cement.

The Eau Claire Formation overlies the Mt. Simon Sandstone in this area. The Eau Claire consists of a lower sandstone that is commonly included with the Mt. Simon. The upper section consists of thinly bedded dolomite and siltstones. The thickness reported in the EDS well was 127 feet. The thickness of the Mt Simon and Eau Claire are consistent with values reported from other wells in the area.

GEOLOGICAL CROSS SECTION OF THE UPPER PENINSULA



State of Michigan
Department of Conservation
Geological Survey

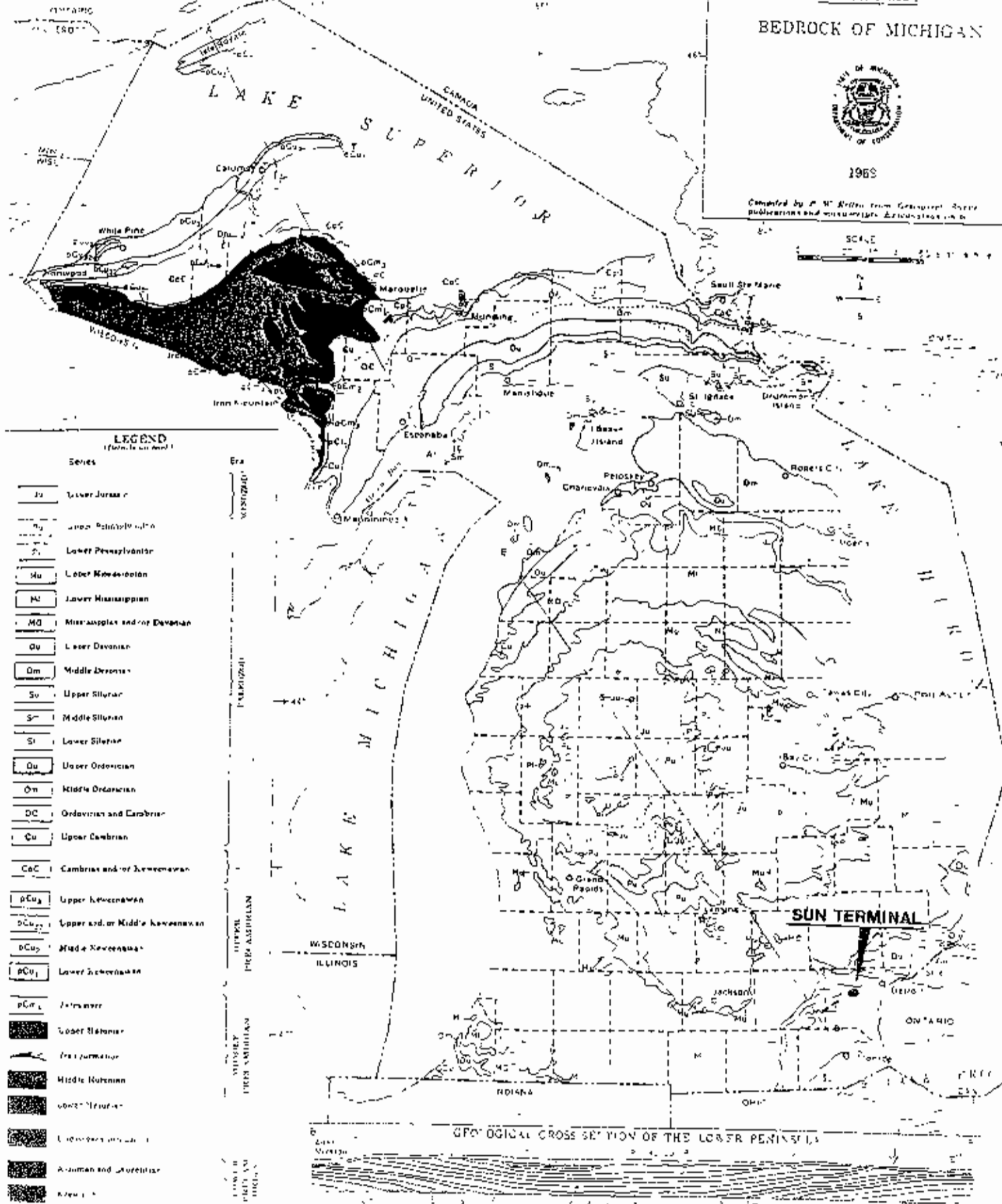
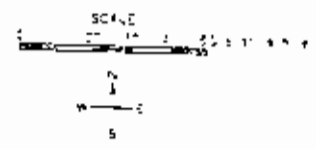
Scale Map 2

BEDROCK OF MICHIGAN



1969

Compiled by P. M. Kirtley from Geological Survey publications and manuscripts. Estimated in part.



LEGEND (from left to right)

Series	Era
Ju	Upper Jurassic
Tr	Triassic
P	Lower Pennsylvanian
Mu	Lower Mississippian
M	Lower Mississippian
MD	Mississippian and/or Devonian
Du	Lower Devonian
Om	Middle Devonian
Su	Upper Silurian
S	Middle Silurian
Sl	Lower Silurian
Qu	Upper Ordovician
On	Middle Ordovician
OC	Ordovician and Cambrian
Cu	Upper Cambrian
CoC	Cambrian and/or Lower Cambrian
pCu ₃	Upper Lower Cambrian
oCu ₃	Upper and/or Middle Lower Cambrian
oCu ₂	Middle Lower Cambrian
oCu ₁	Lower Lower Cambrian
pCu ₁	Lower Cambrian
St	Lower Silurian
Tr	Triassic
M	Middle Mississippian
P	Lower Pennsylvanian
Tr	Triassic
St	Lower Silurian
Tr	Triassic
St	Lower Silurian
Tr	Triassic

FIGURE 3-1

GEOLOGICAL MAP OF MICHIGAN

1975
ALLIED #1 DETROIT TWP 26-2S-11E

AGE	THICKNESS	DEPTH	NAME - TYPE OF ROCK
	104'	104'	Drift
	63'	120-167'	Dundee - Limestone
DEVONIAN	295'	167-462'	Detroit River - Dolomite & Sandstone
	86'	-548'	Sylvania - Dolomite & Sandstone
	44'	-592'	Boils Blanc - Dolomite
	255'	-847'	Bass Island - Dolomite
	978'	-1825'	Salinas - Salt/Anhydrite Shale/Dolomite
SILURIAN	315'	-2140'	Niagaran - Dolomite
Alexandrian Series			
	24'	2161'	Clinton - Dolomite/Shale
	76'	2240'	Cataract - Shale
	46'	2286'	Manitoulin - Dolomite
	424'	2710'	Cincinnati - Shale
	180'	2890'	Utica - Shale
ORDOVICIAN	432'	3322'	Trenton - Limestone
	448'	3770'	Black River - Limestone
	8'	3778'	Glenwood - Limestone
St. Croixan Series			
CAMBRIAN	262'	4040'	Eau Claire - Sandstone/Dolomite
	704'	4110'	Mt. Simon - Sandstone

FIGURE 3--2

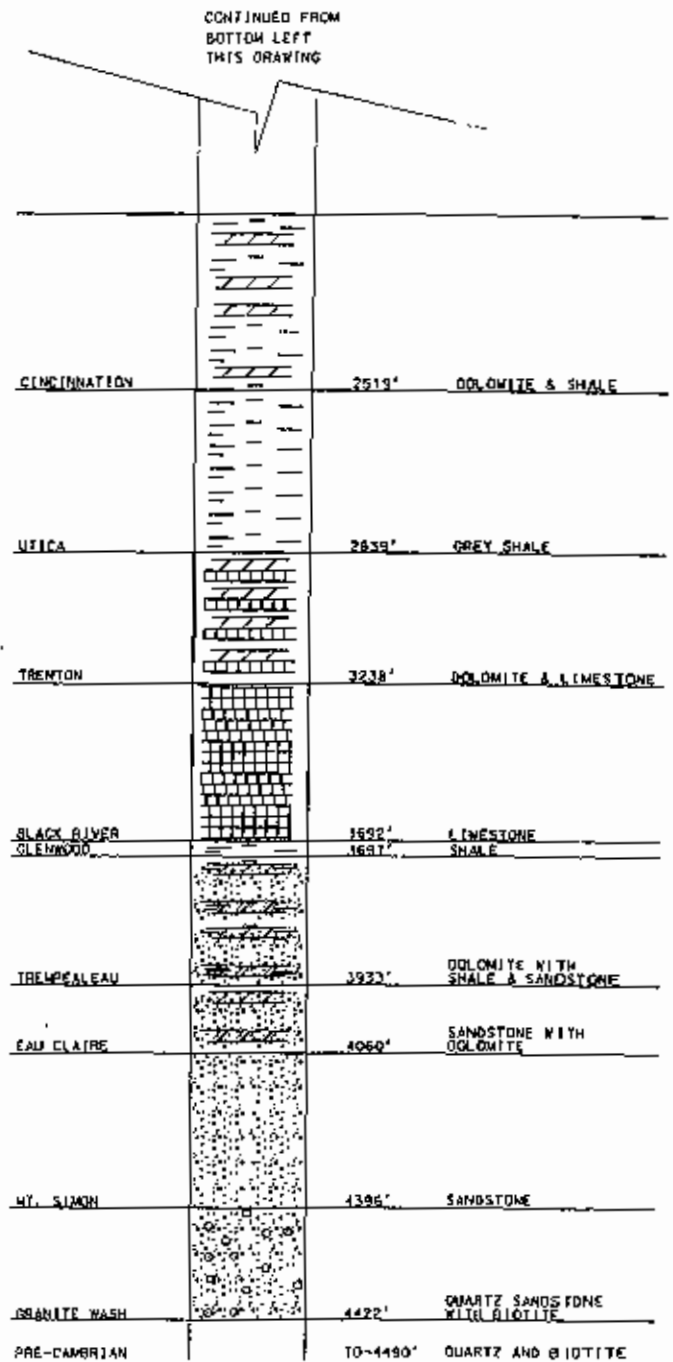
FORMATION	DEPTH 13'	GENERAL DESCRIPTION
GLACIAL DRIFT	88'	SHALE, SAND, & GRAVEL
DUNDEE	220'	LIMESTONE
DETROIT RIVER	487'	DOLOMITE
SYLVANIA	711'	SANDSTONE 1/2 DOLOMITE
BOIS BLANC	729'	SANDY DOLOMITE
BASS ISLAND	911'	GREY/TAN DOLOMITE
SALINA "G" UNIT	1148'	DOLOMITE WITH ANHYDRITE
"E" UNIT	1261'	DOLOMITE
"D" UNIT	1296'	SALT WITH DOLOMITE
"C" UNIT	1384'	SHALE WITH ANHYDRITE
"B" UNIT	1422'	SHALE WITH ANHYDRITE
	1662'	SALT WITH ANHYDRITE INTERBEDDED
V-2 UNIT CARBONATE	1728'	ANHYDRITE & DOLOMITE
A-2 UNIT ANHYDRITE	1834'	ANHYDRITE
A-1 UNIT CARBONATE	1930'	DOLOMITE
NIAGARAN	2122'	BROWN/WHITE DOLOMITE
SHILTON	2146'	GREY DOLOMITE
CABOT HEAD	2215'	RED/GREENISH SHALE
MANITOBA LN	2258'	WHITE DOLOMITE

CONTINUED @
TOP RIGHT
THIS DRAWING

NOTE:

1. STRATIGRAPHY FROM ENVIRONMENTAL DISPOSAL SYSTEM, INC. WELL NO. 1.
2. ALL DEPTHS FROM KB (13').

FIGURE 3-3



LEGEND

 SAND	 DOLOMITE
 SHALE	 LIMESTONE
 SALT	 ANHYDRITE

PB-KBB Inc.
Engineering Construction Operations
1757 KATY FREEWAY #600
HOUSTON, TEXAS 77079

SUN PIPE LINE COMPANY
INKSTER FACILITY

GENERALIZED STRATIGRAPHIC SECTION

JOB No
897

DESIGN: DJ DRAWN: TST CHECKED: WS DATE: 7/98 SCALE: NONE

DRAWING No.
897-GW-013

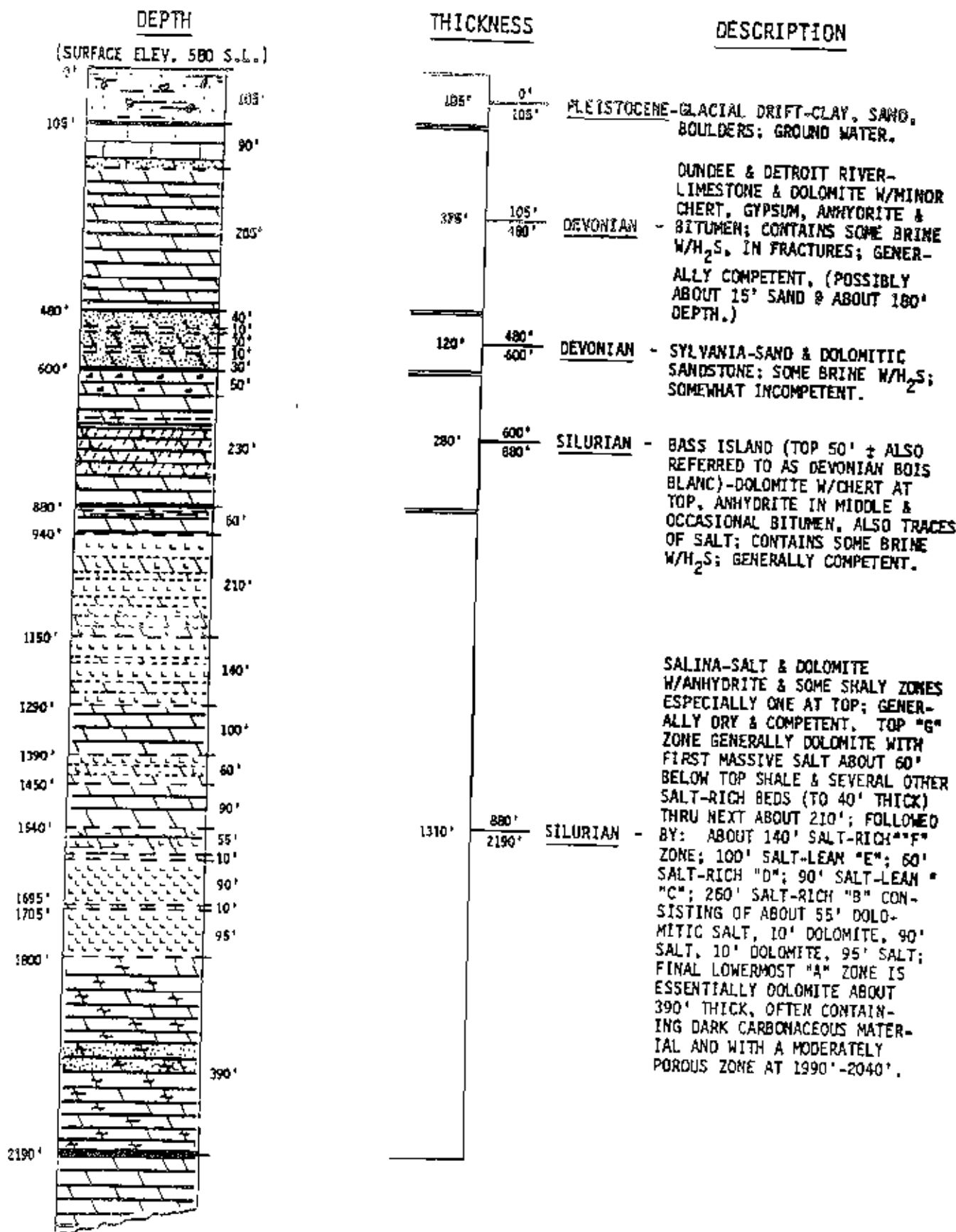


FIGURE 3-4 GEOLOGICAL SECTION

SUN TERMINAL AREA

The Trempealeau or St. Lawrence Formation overlies the Eau Claire Formation. This formation consists of a medium-dark gray, finely crystalline to dense dolomite with glauconite, chert, dark shale and sandstone interbeds in the upper part. The thickness is reported to be about 236 feet in the EDS well. This formation was not identified in the Allied well.

The Glenwood Shale overlies the Trempealeau Formation and consists of 5 feet to 8 feet of dolomitic sandstone, sandy and silty dolomite and dolomitic shale.

The Black River Group overlies the Glenwood Shale and is generally undivided. It is a thick, 450 feet in this area, sequence of dense, brown to gray, micritic limestone. The formation includes widespread cherty zones.

The Trenton Group overlies the Black River Group and is found to be about 399 feet in this area. The Trenton Group consists of light-brown to brown fossiliferous limestone which has been dolomitized in some areas.

The Utica Shale overlies the Trenton Group and is about 320 feet thick in this area. The shale consists of a hard, dark gray to greenish-black, calcareous shale that is homogenous. A distinctive contact exists between the Trenton and Utica shale, unlike the gradational contact with the overlying Cincinnati Series.

The Cincinnati Series consists of a sequence of interbedded shales and carbonates about 261 feet thick.

The Manitoulin Formation overlies the Cincinnati Series and has about 43 feet of white dolomite.

The Cabot Head Formation overlies the Manitoulin Formation, which contains about 69 feet of red and greenish shale.

The Niagaran Series of the middle Silurian overlies the Cabot Head Formation in this area. This series includes a basal dolomitic shale (Clinton Shale) and consists of mostly dolomites in the outcrop areas. The Niagaran is about 216 feet thick in this area as indicated from the EDS well.

The Salina Group of the upper Silurian overlies the Niagaran Series. The Salina Group is a thick sequence of carbonate anhydrite, salt and shale in the basin. The Salina is about 1019 feet in the area of the EDS well and includes a sequence of evaporite units starting at the base of the formation with A-1 carbonate.

The A-1 Carbonate overlies the Niagaran Series and the A-2 Carbonate overlies the A-1 Carbonate. The sequence is about 268 feet thick in the EDS well and consists of dolomite limestone and anhydrite.

The B member of the Salina overlies the A-2 Evaporite and is about 233 feet thick in the Terminal area as determined from Sun's Well No. 9 in the interval from 1500 feet to 1733 feet. The well was drilled to 1733 feet and was in salt at total depth. The base of the salt bed is not expected to be deeper than 1733 feet. The lithology of the member is essentially salt with interbeds of anhydrite.

The overlying C member is principally anhydrite and dolomite shale. The total thickness is about 88 feet thick. The overlying D member is salt about 35 feet thick. The overlying E member is dolomite and the F and G members are salt bedded with dolomite and anhydrite. The top of the G member is dolomite with a shale in the upper part. The total thickness of this sequence is about 112 feet.

The Bass Island Formation overlies the Salina Group with about 182 feet of fine-grained dolomite.

The Bois Blanc overlies the Bass Island Formation and is about 18 feet thick in this area. The formation is a cherty limestone with some dolomite.

The Sylvania Sandstone overlies the Bois Blanc Formation and consists of well-rounded and sorted, fine to medium grained quartz grains. The sandstone is about 224 feet thick in this EDS well and 120 feet thick in the Terminal area.

The Detroit River (Lucas Formation) overlies the Sylvania Sandstone and is about 285 feet thick in the Terminal area. The formation consists of dolomite with chert, anhydrite and gypsum.

The Dundee Limestone overlies the Detroit River in this area and found to be about 105 feet thick in the Terminal area. The overlying glacial drift consists of clay and silt in this area.

The lithology was modified from the publication "Hydrogeology for Underground Injection Control in Michigan Part 1" published by the Geology Department of the Western Michigan University in 1981. The formation depths and thickness were taken from well data from the terminal Allied No. 1 and the EDS Romulus No. 1 well and logs from the Terminal area.

G. *N/A*

N/A

H. Operating data.

FORMULAIC MAXIMUM INJECTION PRESSURE

SPECIFIC GRAVITY BRINE 1.2
 PRODUCT 0.57

STATIC CONDITIONS - CAVERNS FULL OF PRODUCT

Cavern #	Casing depth	Tubing Depth	MAX. INJECTION PRESSURE (PSI)	
			EPA FORMULA	API FORMULA
1	1170	1225	334.17	334.55
2	1194	1258	343.17	343.57
3	1185	1274	347.53	347.94
4	1570	1661	453.10	453.63
5	1540	1669	455.29	455.81
6	1181	1240	338.26	338.65
7	1507	1694	462.11	462.64
8	OUT OF SERVICE			
9	1496	1653	450.92	451.44

EPA FOMULA P (max) = $\{ [0.8 - (0.433) * (SG + 0.05)] * H \} - 14.7$ (PRODUCT - BRINE) ³²²

API FORMULA P (max) = [(SG Brine) - (SG Product)] + Static pressure at wellhead for brine

SUN PIPE LINE COMPANY

INKSTER TERMINAL CAVERNS

Cavern #	Max. Capacity net barrels	Flow Rate (BPH) (Pipeline)	Temp. Deg. F	Max. Brine Inlet Pressure	Cavern Minimum Pressure	Max. Receiving Pressure
1	100,443	400-2000	0 - 100	313 psi	325 psi	750 psi
2	158,921	400-2000	0 - 100	318 psi	340 psi	750 psi
3	120,000	400-2000	0 - 100	306 psi	360 psi	750 psi
4	135,423	400-2000	0 - 100	416 psi	450 psi	750 psi
5	123,138	400-2000	0 - 100	397 psi	450 psi	750 psi
6	160,000	400-2000	0 - 100	315 psi	335 psi	750 psi
7	117,100	400-2000	0 - 100	372 psi	460 psi	750 psi
9	59,856	400-2000	0 - 100	377 psi	445 psi	750 psi

FOR REFERENCE ONLY SEE MSDS SHEETS FOR SPECIFICS

FROM: <http://martinez.etsi.in.upm.es/dat/rel/LIQ.htm>

Substance	Formula	Melting temp. T_f K	Boiling temp. T_b K	Melting enthalpy h_d kJ/kg	Boiling enthalpy h_v kJ/kg	Density (mass) ρ kg/m ³	Thermal expansion $\alpha \cdot 10^6$ K ⁻¹	Compressibility $k \cdot 10^6$ Pa ⁻¹	Surface tension ^b σ N/m	Thermal capacity c_p J/(kg K)	Thermal conductivity k W/(m K)	Dynamic viscosity $\mu \cdot 10^6$ Pa.s	SPECIFIC GRAVITY
-----------	---------	-----------------------------	-----------------------------	------------------------------------	------------------------------------	---	---	---	---	---------------------------------------	--	---	------------------

Function values at 100 kPa and 298 K or the liquid-vapour equilibrium pressure at 298 K (if greater), or the liquid-vapour equilibrium temperature at 100 kPa (for permanent gases).

n-Butane	C ₄ H ₁₀	135	273	80	365	578			0.012	2400	0.12	282	0.67
iso-Butane	C ₄ H ₁₀	115	281	76	366	565	2000		0.012	2800	0.12	150	0.67
Propane	C ₃ H ₈	83	231	80	430	585	2010		0.008	2116	0.1	327	0.59
Water ^a	H ₂ O	273	373	334	2257	998	200	0.45	0.078	4180	0.6	1000	1.00

a) The compressibility coefficient, k , is related to the speed of sound, c , and the density by $c^2(k-1)/2$.

b) Surface tension for the liquid in air.

c) Triple point of C₂H₂ (n_v=320 kJ/kg, p_t=128 kPa, T_t=80 °C)

d) Sublimation point of C₂H₂ (n_v=320 kJ/kg, n_v=729 kg/m³).

e) Triple point of CO₂ (n_v=535 kJ/kg).

f) Sublimation point of CO₂ (n_v=575 kJ/kg).

g) Gasoline and kerosene are mixtures of various compositions and has not precise boiling or melting points (e.g. at 300 K 10%wt of gasoline is in the vapour state, and at 440 K 90%).

Surface tension may vary in the range $s=0.024 \dots 0.035$ N/m.

h) Oils in general, are thick liquids (non-volatile and viscous) made from plants, minerals or animals. They are polymers and do not show sharp phase transitions.

They are usually less dense than water (but sulphuric oleum reaches a density double than water); e.g. olive and vegetable oils have some $n=916 \dots 925$ kg/m³, whereas lubricant, combustible

and hydraulic oils may have $n=600 \dots 1000$ kg/m³, all of them with low thermal conductivities (e₀.1-0.2 W/m.K), even for thermal oils, that are just more resistant to high temperatures (up to 600 K)

Thermal capacities are near $c_p=2000$ J/kg.K in most cases, but viscosity may vary orders of magnitude from one oil to the other

(e.g. $n=3 \cdot 10^{-3}$ Pa.s for gas oil, $n=10^{-3}$ Pa.s for olive oil, or $n>1000 \cdot 10^{-3}$ Pa.s for fuel oil).

i) Sodium, $\rho_L=780$ kg/m³, $\rho_S=970$ kg/m³.

j) Water properties may be used as a first approximation for many natural aqueous solutions (milk, wine, beer, vinegar, seawater, urine, fruit juices, etc.).

Thermal capacities are typically $c=1020 \dots 1030$ kg/m³, their melting points 1-2 K below that of water, their boiling points 0.5-1.5 K above that of water, their thermal capacities some 80% of water.

k) Interface tension water/mercury 0.390 N/m, water/octane 0.082 N/m, water/benzene 0.035 N/m. Contact angle water/glass in

air 0° if pure, some 30° typical; mercury/glass in air 140° if pure, some 120° typical.

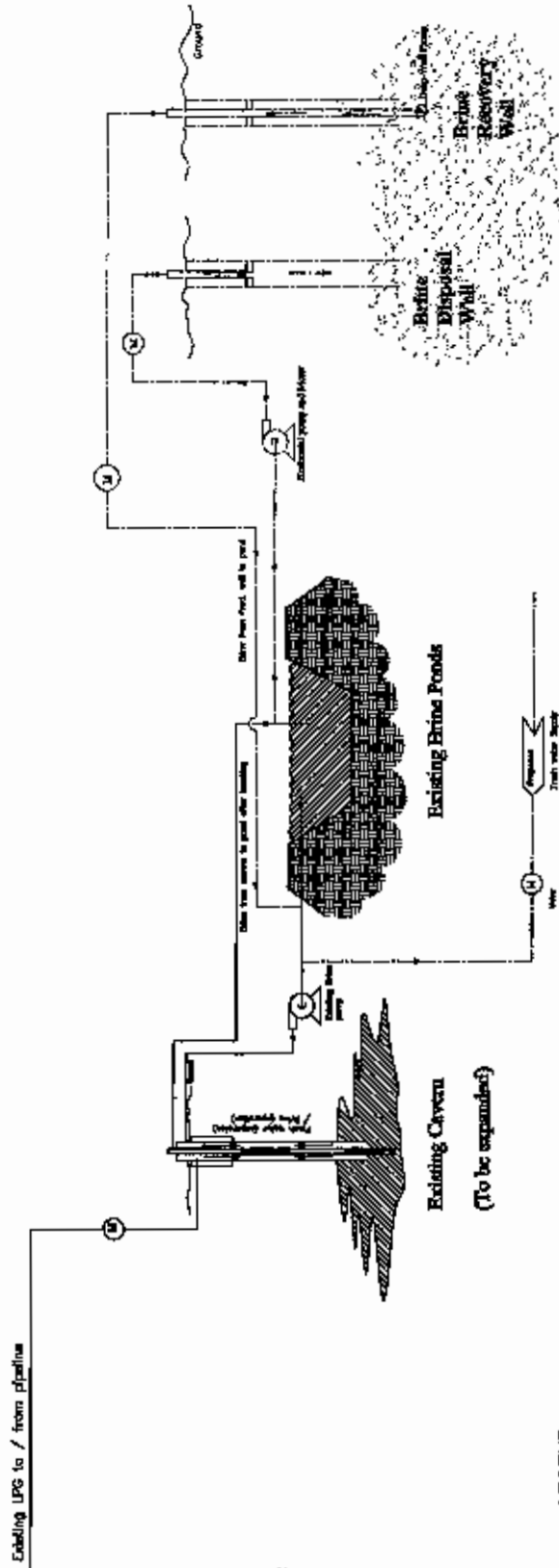
l) Liquid viscosity varies a lot with temperature; e.g. for water, $m=1.8 \cdot 10^{-3}$ Pa.s at 0 °C, 0.5-10-3 Pa.s at 50 °C and 0.35-10-3 Pa.s at 100 °C

FROM: <http://martinez.etsi.in.upm.es/dat/rel/LIQ.htm>

INKSTER CAVERN EXPANSION PROJECT

PROPOSED (GENERIC) SCHEMATIC OF EXPANSION WITH PROPOSED BRINE DISPOSAL WELL

(Showing only one cavern for clarity)



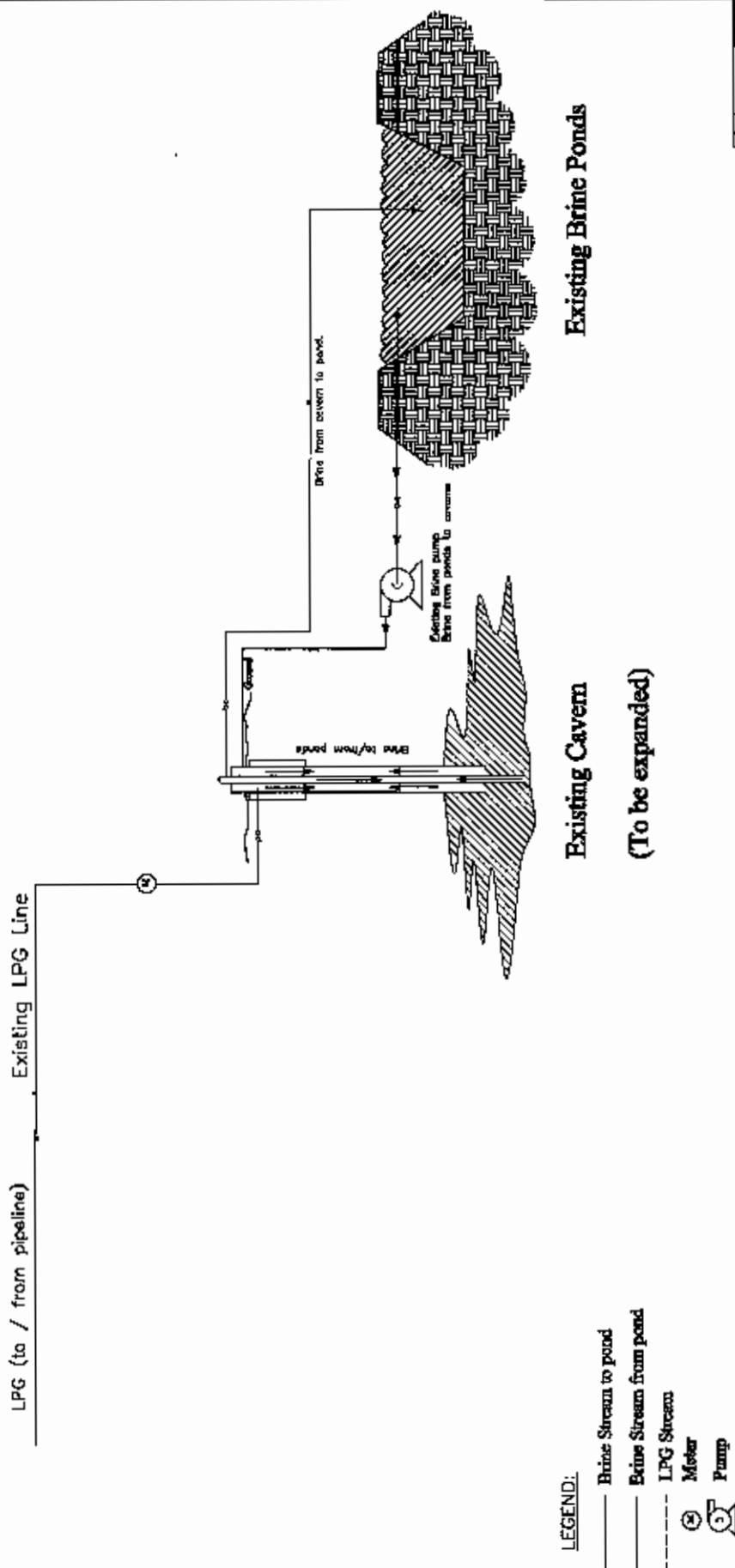
LEGEND:

- EXISTING: Brine Stream
- PROPOSED: Fresh Water Stream
- - - EXISTING: Brine Stream
- ⊕ Pump
- PROPOSED: Disposal / Production wells & piping

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

INKSTER CAVERN EXPANSION PROJECT

EXISTING (GENERIC) SCHEMATIC (abowing only one cavern for clarity)

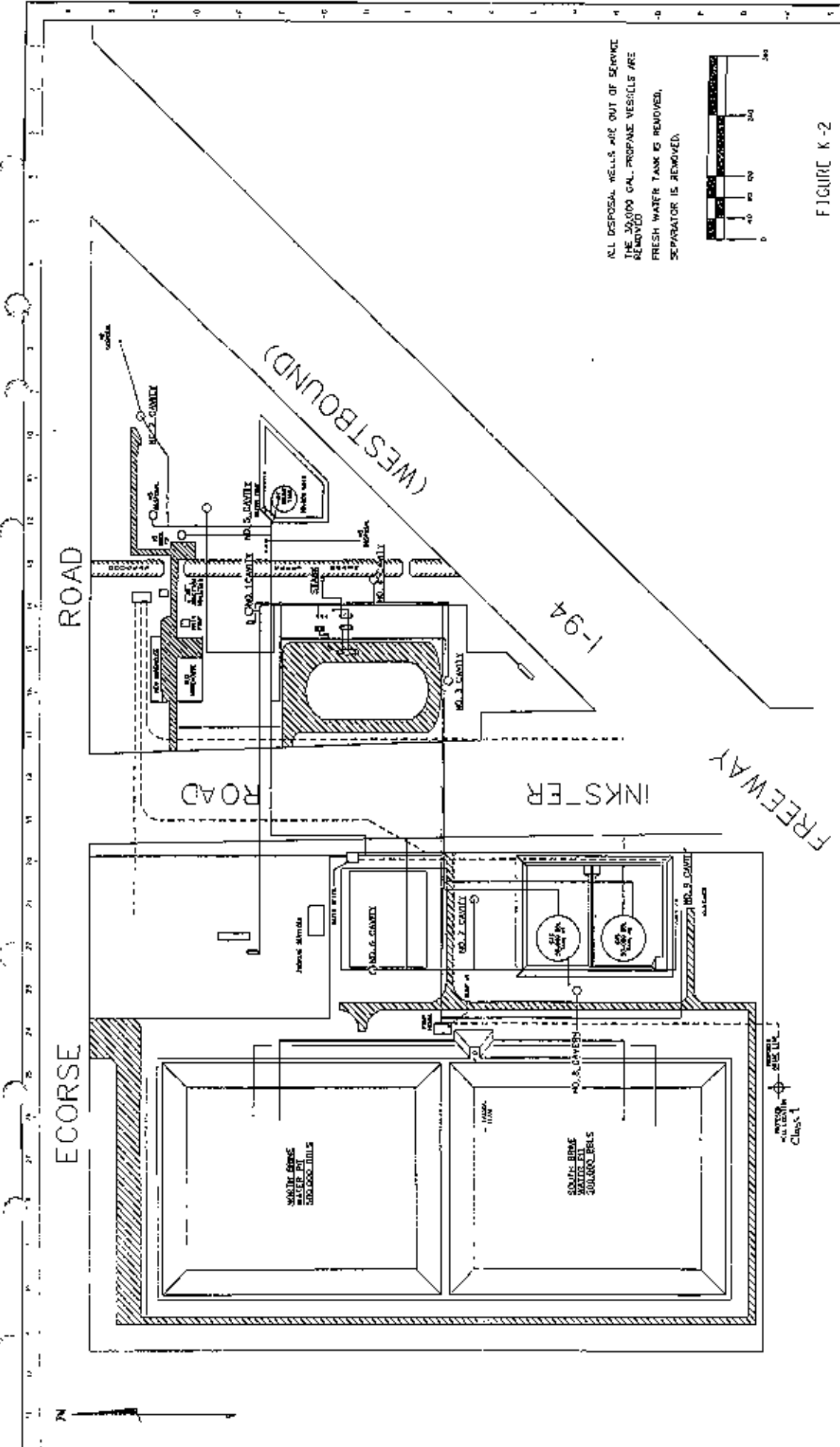


- LEGEND:**
- Brine Stream to pond
 - - - Brine Stream from pond
 - - - LPG Stream
 - ⊗ Meter
 - ☸ Pump

**Existing Cavern
(To be expanded)**

Existing Brine Ponds

1	2	3	4	5	6	7	8	9	10
Project Name: _____ Date: _____ Scale: _____ Drawing No.: _____ Revision: _____									



ALL DISPOSAL VESSELS ARE OUT OF SERVICE
 THE 30,000 GAL. PROPANE VESSELS ARE
 REMOVED
 FRESH WATER TANK IS REMOVED,
 SEPARATOR IS REMOVED.

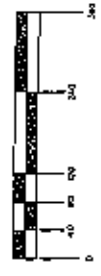


FIGURE K-2

SUN PIPELINE COMPANY INKSTER TERMINAL		
PB-KBB Inc. Engineering & Construction Services 4000 W. 116th St. Overland Park, MO 66204 913-641-7200		
INKSTER TERMINAL SITE PLAN		
PREPARED BY: _____ DATE: _____ DRAWN BY: _____ DATE: _____		
REVISIONS NO. DATE DESCRIPTION	APPROVED BY: _____ DATE: _____	EXTERIOR ELEVATIONS NO PLENUM DRAWING
1 1/4" = 1' 0"	NORTH	



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: BUTANE

Manufacturer Information:

Sunoco, Inc. (R&M)
Ten Penn Center
1801 Market Street
Philadelphia, Pennsylvania, 19103-1699

Product Use:

Emergency Phone Numbers:

Chemtrec (800) 424-9300
Sunoco Inc. (800) 964-8861

Information:

Product Safety Information (610) 859-1120

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	Amount (Vol%)
BUTANE	106-97-8	100

EXPOSURE GUIDELINES (SEE SECTION 15 FOR ADDITIONAL EXPOSURE LIMITS)

	CAS No.	Governing Body	Exposure Limits
BUTANE	106-97-8	ACGIH	TWA 800 ppm

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Danger! Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Liquefied gas is extremely cold. Contact may cause frostbite. Vapor or gas reduces oxygen available for breathing.

Hazards Ratings:

Key: 0 = least, 1 = slight, 2 = moderate, 3 = high, 4 = extreme

	Health	Fire	Reactivity	PPI
NFPA	1	4	0	
HMS	1	4	0	X

POTENTIAL HEALTH EFFECTS

PRE-EXISTING MEDICAL CONDITIONS

The following diseases or disorders may be aggravated by exposure to this product: Available data does not identify any conditions.

▪ **INHALATION**

High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis and loss of consciousness and even death). High concentrations in immediate area can displace oxygen and can cause dizziness, unconsciousness, and even death with longer exposure. Keep people away from such vapors without self-contained breathing apparatus.

LC50 (mg/l): no data
LC50 (mg/m3): no data
LC50 (ppm): no data

▪ **SKIN**

Liquified gas is extremely cold. Contact may cause frostbite.

Draize Skin Score: no data Out of 8.0
LD50 (mg/kg): no data

▪ **EYES**

Vaporizing liquid may cause frostbite.

▪ **INGESTION**

Material cannot be reasonably ingested.

LD50 (g/kg): no data

4. FIRST AID MEASURES

• **INHALATION**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and continue to monitor. Get immediate medical attention.

• **SKIN**

Remove contaminated clothing. Wash skin with soap and water. Get medical attention. In case of cold burns (frostbite) caused by rapidly expanding or vaporizing liquids, get medical attention promptly.

EYES

Obtain immediate medical treatment.

• **INGESTION**

First aid not normally required.

5. FIRE FIGHTING MEASURES

• **EXTINGUISHING MEDIA**

Water spray; Dry chemical; Carbon dioxide;

• **FIRE FIGHTING INSTRUCTIONS**

DO NOT extinguish a gas fire unless effective immediate shut-off of gas flow is possible. Explosive vapor could form. Allow gas to burn if flow cannot be turned off. Use water spray to cool fire exposed tanks and containers. Wear structural fire fighting gear.

FLAMMABLE PROPERTIES

	Typical	Minimum	Maximum	Text Result	Units	Method
Flash Point				MINUS 76	F	N/A
Autoignition Temperature				761 ESTIMATED	F	N/A
Lower Explosion Limit	1.9				%	N/A
Upper Explosion Limit	8.5				%	N/A

6. ACCIDENTAL RELEASE MEASURES

Prevent ignition, stop leak and ventilate the area. Vapor can be controlled using a water fog. Water streams should not be directed to the liquid as this will cause the liquid to boil and generate more vapor. Keep personnel upwind from leak. If this material is released into a work area, evacuate the area immediately.

7. HANDLING AND STORAGE

- **HANDLING**

Use only in a well-ventilated area. Avoid breathing (dust, vapor, mist, gas). Avoid contact with this material. Avoid contact with eyes.

- **STORAGE**

Keep away from heat, sparks, and flame. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Consult With a Health and Safety Professional for Specific Selections

- **ENGINEERING CONTROLS**

Use with adequate ventilation. Ventilation is normally required when handling or using this product to keep exposure to airborne contaminants below the exposure limit.

- **PERSONAL PROTECTION**

- **EYE PROTECTION**

Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent).

- **GLOVES or HAND PROTECTION**

Protective gloves are recommended to protect against contact with product.

- **RESPIRATORY PROTECTION**

Concentration in air determines the level of respiratory protection needed. Use only NIOSH certified respiratory equipment.

- **OTHER**

Where splashing is possible, full chemically resistant protective clothing (e.g., acid suit) and boots are required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Property	Typical	Units	Text Result	Reference
Appearance		N/A	COMPRESSED GAS.	
Boiling Point		F	17 TO 30	
Bulk Density		lb/gal	no data	
Melting Point		F	no data	
Molecular Weight		g/mole	no data	
Octanol/Water Coefficient		N/A	no data	
pH		N/A	no data	
Specific Gravity	0.58	N/A		
Solubility In Water		wt %	NIL	
Odor		N/A	STALE, RICH ODOR.	
Odor Threshold		ppm	no data	
Vapor Pressure		mmHg	GAS	@ 20 C
Viscosity (F)		SUS	no data	
Viscosity (C)		CsT	no data	

% Volatile

100 wt %

10. STABILITY AND REACTIVITY

- **STABILITY**
Stable
- **CONDITIONS TO AVOID**
Avoid heat, sparks and open flame.
- **INCOMPATIBILITY**
Strong oxidizers
- **HAZARDOUS DECOMPOSITION PRODUCTS**
Combustion may produce carbon monoxide, carbon dioxide and other asphyxiants.
- **HAZARDOUS POLYMERIZATION**
Will not polymerize.

11. ECOLOGICAL INFORMATION

No data available

12. DISPOSAL CONSIDERATIONS

Follow federal, state and local regulations. This material is a RCRA hazardous waste. Do not flush material to drain or storm sewer.

13. TRANSPORT INFORMATION

<u>Governing Body</u>	<u>Mode</u>	<u>Proper Shipping Name</u>
DOT	Ground	Liquefied Petroleum Gas

<u>Governing Body</u>	<u>Mode</u>	<u>Hazard Class</u>	<u>UN/NA No.</u>	<u>Label</u>
DOT	Ground	2.1 (Flammable Gas)	1075	

14. REGULATORY INFORMATION

<u>Regulatory List</u>	<u>Component</u>	<u>CAS No.</u>
ACGIH 2000 - Time Weighted Averages	BUTANE	106-97-8
Canada - WHMIS: Ingredient Disclosure	BUTANE	106-97-8
Inventory - Canada - Domestic Substances List	BUTANE	106-97-8
Inventory - European EINECS Inventory	BUTANE	106-97-8
Inventory - Japan - (ENCS)	BUTANE	106-97-8
Inventory - Korea - Existing and Evaluated	BUTANE	106-97-8
Inventory - TSCA - Sect. 8(b) Inventory	BUTANE	106-97-8
Massachusetts Right To Know List	BUTANE	106-97-8
New Jersey - Department of Health RTK List	BUTANE	106-97-8
New Jersey - Special Hazardous Substances	BUTANE	106-97-8
NJ Environmental Hazardous Substances List	BUTANE	106-97-8
Pennsylvania Right to Know List	BUTANE	106-97-8

Title III Classifications Sections 311,312:

- Acute: **YES**
- Chronic: **NO**
- Fire: **YES**
- Reactivity: **NO**
- Sudden Release of Pressure: **YES**

15. OTHER INFORMATION

Follow all MSDS/label precautions even after container is emptied because it may retain product residue.

===== 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

REVISION DATE: 08/18/1992
UN NUMBER-

PRIMARY APPLICATION-

MANUFACTURER- SUN COMPANY, INC.
TEN PENN CENTER
1801 MARKET STREET
PHILADELPHIA PA 19102 1899

SYNONYMS.....: SODIUM REFERENCE STANDARD; SS-139; ACC40180
CAS REGISTRY NO: 1310-58-3
CAS NAME.....: SODIUM CHLORIDE
CHEMICAL FAMILY: SODIUM CHLORIDE SOLUTION
INFORMATION

SUPPLIER... STEVEN MCDANIEL
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EMERGENCY PHONE NUMBERS (AFTER NORMAL BUSINESS HOURS)
24HR PHONE. 1-800-964-8861
CHEMTREC. 1-800-424-9300

*** SECTION 2 - INGREDIENTS ***

SODIUM CHLORIDE CAS #1310-58-03, 5%; WATER 95%.
'INGREDIENTS WITH * IN CAS NUMBER ARE SUBJECT TO REPORTING REQUIREMENTS OF
SECTION 313 EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW AND 40CFR172'

*** SECTION 3 - PHYSICAL DATA ***

BOILING POINT... 212 (DEG. F) 100 (DEG. C)
MELTING POINT... 32 (DEG. F) 0 (DEG. C)
SPECIFIC GRAVITY.... 1.0 (H2O=1)
PACKING DENSITY..... N.A. (KG/M3)
VAPOR PRESSURE..... 14 (MM HG AT 20C)
VAPOR DENSITY..... .7 (AIR=1)
SOLUBILITY IN WATER.: COMPLETE (% BY VOL)
PH INFORMATION..... N.D. AT CONC. N.D. G/L H2O
% VOLATILES BY VOL.: N.D.
EVAPORATION RATE.... > 1 (ETHYL ETHER=1)
OCTANOL/WATER COEFF.: N.D.
APPEARANCE.....: COLORLESS LIQUID
ODOR.....: N.D.
ODOR THRESHOLD.....: N.D. (PPM)

*** SECTION 4 - FIRE AND EXPLOSION DATA ***

FLASH POINT WILL NOT IGNITE (DEG. F) WILL NOT IGNITE (DEG. C)
AUTOIGNITION TEMP. WILL NOT IGNITE (DEG. F) WILL NOT IGNITE (DEG. C)

---NFPA CLASSIFICATION--- -----HAZARD RATING-----
HEALTH - 0 0 - LEAST 3 - HIGH
FIRE - 0 1 - SLIGHT 4 - EXTREME
REACTIVITY 0 2 - MODERATE

SPECIFIC HAZARD CERCLA RATING

---FLAMMABLE LIMITS IN AIR---

LOWER EXPLOSIVE LIMIT (LEL) WILL NOT IGNITE % VOL.
UPPER EXPLOSIVE LIMIT (UEL) WILL NOT IGNITE % VOL.

FIRE AND EXPLOSION HAZARDS -----

NONCOMBUSTIBLE.

EXTINGUISHING MEDIA -----

WATER FOG. MECHANICAL FOAM. ALCOHOL FOAM DRY CHEMICAL POWDER. CARBON
DIOXIDE.

SPECIAL FIRE FIGHTING INSTRUCTIONS----

WEAR SELF-CONTAINED BREATHING APPARATUS WHEN FIRE FIGHTING IN CONFINED
SPACE.

*** SECTION 5 - HEALTH HAZARD INFORMATION ***

EXPOSURE LIMITS----- NOT DETERMINED

*** ROUTES OF EXPOSURE AND EFFECTS ***

INHALATION -----

NOT DETERMINED/ NO DATA.

SKIN -----

NO SKIN EFFECTS EXPECTED.

EYE -----

CONTACT WITH THE EYE MAY CAUSE MINOR IRRITATION

INGESTION -----

NOT DETERMINED/ NO DATA.

*** FIRST AID ***

INHALATION -----

NOT DETERMINED/ NO DATA.

SKIN -----

NOT DETERMINED/ NO DATA.

EYE -----

FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF IRRITATION PERSISTS,
OBTAIN MEDICAL ASSISTANCE.

INGESTION -----

NOT DETERMINED/ NO DATA.

*** SECTION 6 - REACTIVITY DATA ***

STABILITY-----

STABLE.

CONDITIONS TO AVOID: STABLE UP TO BOILING
POINT, APPROXIMATELY 100C/212F

INCOMPATIBLE MATERIALS-----

WATER-REACTIVE SUBSTANCES, OXIDES,
SODIUM

HAZARDOUS DECOMPOSITION-----

PRODUCTS: N.D.

POLYMERIZATION-----

WILL NOT OCCUR.

*** SECTION 7 - SPECIAL PROTECTION INFORMATION ***

VENTILATION -----

NONE NORMALLY NEEDED.

*** PERSONAL PROTECTIVE EQUIPMENT ***

EYE -----

SPASH PROOF CHEMICAL GOGGLES RECOMMENDED

GLOVES -----

GLOVES RECOMMENDED

RESPIRATOR -----

NONE NORMALLY NEEDED.

OTHER -----

NOT DETERMINED/ NO DATA.

*** SECTION 8 - DISPOSAL PROCEDURES ***

AQUATIC TOXICITY -----

KEEP OUT OF SEWERS, WATERWAYS AND WATER SOURCES.

SPILL, LEAK OR RELEASE-----

ABSORB ON INERT MATERIAL. SHOVEL, SWEEP OR VACUUM SPILL.

WASTE DISPOSAL METHOD-----

FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS. CONTRACT TO AUTHORIZED
DISPOSAL SERVICE.

*** SECTION 9 - SPECIAL PRECAUTIONS ***

STORAGE AND HANDLING CONDITIONS-----

AVOID PROLONGED BREATHING OF MIST OR VAPOR.

*** SECTION 10 - ADDITIONAL PRECAUTIONS AND LABELS ***

THE TOXICITY OF THIS SODIUM CHLORIDE SOLUTION HAS NOT BEEN QUANTIFIED.

I.N/A

N/A

J. Stimulation program.

N/A

K. Injection procedures.

*Using existing operation
procedure*



SUMMARY: INJECTION PROCEDURE

Sunoco Partners Terminal and Marketing LLP.
7155 Inkster Road, Taylor, MI 48180.

PRESENTLY: Brine is used to displace the LPG's (propane, butane, iso-butane) stored in the existing 8 operational caverns (numbered #1 to #9 with #8 being out of service).

The existing facility has two 500,000BBL brine ponds located within the property. These act as brine supplies and reservoirs.

When LPG deliveries are made to the facility, they are pumped into the caverns via an existing network of pipelines. This product displaces the brine resident in the caverns, which is then piped into the brine ponds via a flow through 10,000BBL brine tank that acts like a transition vessel.

When LPG movement out of the caverns is desired, brine from the existing above ground ponds is pumped, via two existing pumps, P11 and P14, into the caverns. This displaces the LPG's from the caverns into the existing pipeline system, which are in turn piped to various locations throughout the pipeline system.

PROPOSED: Use fresh water to displace the LPG's in the caverns targeted for expansion ONLY. All other caverns shall remain in the existing BRINE / LPG service under same conditions. One pond shall be designated to accommodate the caverns not slated for expansion.

When LPG movements are required out of the caverns, we shall inject fresh water into the existing caverns slated for expansion via the existing pumps, P11 and P14. This fresh water shall displace the LPG's, which will then be piped to their final destination.

The fresh water will reside in the cavern for a period of time (+/- 6 months) causing leeching of the caverns and thus expand them. The leeching will convert the fresh water into water containing leached salt, becoming (leached) brine from the cavern formation. Cavern characteristics including pressure shall be monitored at all times and fluid movement controlled to facilitate safe cavern operations. Brine concentrations and scheduled sonar tests will determine the actual cavern growth rate and volume.

Months later when LPG deliveries into the (same) caverns are desired, the leached brine (originally fresh water) resident in the caverns shall be displaced by the LPG's from the pipeline. The leached brine shall be pumped into the existing ponds via the flow through tank.

However, since the existing facility can only accommodate approximately 1,000,000 BBLs of brine storage, it will be necessary to dispose of this brine into the proposed 'Brine Disposal Well' permitted under MI-DEQ and US-EPA.

Any additional brine not available from the ponds shall be obtained from a proposed brine production well.

L. *N/A*

M. Construction details

Will use the existing cavern setup

Caverns 4, 5, 7 and 9: substitute water for brine to facilitate leaching.

Caverns 1, 2, 3 and 6: No change – Will continue using brine.

Cavern 4



SUN PIPE LINE COMPANY WELL NO. 4

INITIAL SONAR VOLUME = 107,086
 Gross Volume Leached = 167,139
 Net Volume Increase = 145,338
 Final Cavern Volume = 252,424

DIRECT CIRCULATION
 FLOW RATE = 500 GPM
 LEACHING TIME = 120 DAYS

CELL	CELL HEIGHT	DEPTH	RADIUS	CAVERN SG	PLUME SG	PLUME GPM	ANGLE	CELL BBLs	ACCUM. BBLs
39	77	1583	73.19	1.12	1.12	3918.42	108.63	5995.4	11835.8
38	75	1585	73.59	1.13	1.12	3907.17	87.73	6060.4	17898.2
37	73	1587	73.04	1.13	1.12	3892.42	122.78	5989.5	23865.7
36	71	1589	76.17	1.13	1.12	3873.01	157.86	6492.2	30357.9
35	69	1591	82.87	1.13	1.12	3848.73	144.55	7885	38042.9
34	67	1593	81.79	1.13	1.12	3821.44	45.92	7485.9	45528.2
33	65	1595	78.99	1.13	1.12	3791.06	54.03	6983	52511.2
32	63	1597	78.88	1.13	1.12	3757.28	89.5	6963.3	59474.5
31	61	1599	78.86	1.13	1.12	3719.73	128.28	6976.8	66451.4
30	59	1601	82.04	1.13	1.12	3677.44	145.39	7532	73983.4
29	57	1603	84.76	1.13	1.12	3631.27	119.17	8039.1	82022.4
28	55	1605	84.27	1.13	1.12	3581.47	87.24	7947.5	89970
27	53	1607	84.56	1.13	1.12	3527.98	98.64	8002.8	97972.5
26	51	1609	84.68	1.13	1.12	3470.53	119.17	8082.8	106035.1
25	49	1611	86.80	1.13	1.12	3407.99	151.78	8430.8	114465.9
24	47	1613	92.34	1.13	1.12	3340.11	144.25	9541.1	124007
23	45	1615	92.35	1.13	1.12	3268.19	79.8	9544.7	133551.7
22	43	1617	91.61	1.13	1.12	3192.81	43.32	9392.8	142944.5
21	41	1619	88.11	1.14	1.12	3114.52	28.11	8887.8	151832.2
20	39	1621	84.13	1.14	1.12	3033.43	28.47	7919.8	159552
19	37	1623	80.07	1.14	1.12	2948.86	52.48	7175.3	166727.2
18	35	1625	81.05	1.14	1.12	2859.09	152.31	7352.2	174079.5
17	33	1627	87.70	1.14	1.12	2763.61	157.58	8607.1	182686.6
16	31	1629	90.74	1.14	1.12	2662.28	144.36	9215.2	191901.8
15	29	1631	93.28	1.14	1.12	2557.47	23.95	9737.2	201639
14	27	1633	81.73	1.14	1.12	2449.87	12.81	7476.1	209115.1
13	25	1635	75.67	1.14	1.12	2338.47	37.17	6408.1	215523.2
12	23	1637	76.46	1.14	1.11	2222.77	47.73	6542	222065.2
11	21	1639	72.04	1.14	1.11	2102.35	65.48	5807	227872.2
10	19	1641	74.63	1.14	1.11	1976.65	89.88	6233.5	234105.7
9	17	1643	72.03	1.14	1.11	1845.6	57.95	5805.7	239911.4
8	15	1645	72.13	1.14	1.11	1708.67	58.82	5822.1	245733.6
7	13	1647	69.61	1.14	1.1	1565.78	37.33	5422	251155.6
6	11	1649	68.88	1.14	1.1	1416.22	35.76	5005.9	256161.5
5	9	1651	64.25	1.15	1.09	1258.84	39.29	4619.7	260781.2
4	7	1653	61.89	1.15	1.08	1092.3	30.96	4300.7	265081.9
3	5	1655	57.58	1.15	1.07	914.53	20.27	3710.5	268792.4
2	3	1657	51.16	1.15	1.05	721.29	21.28	2828.9	271721.4
1	1	1659	47.30	1.15	1	497.1	27.38	2503.4	274224.7
		1662	29.76					1160	275384.7
		1664	22.59					855	276239.7
		1665	8.20					197	276436.7
		1666	7.51					71	276507.7

Su... Pipeline Co.

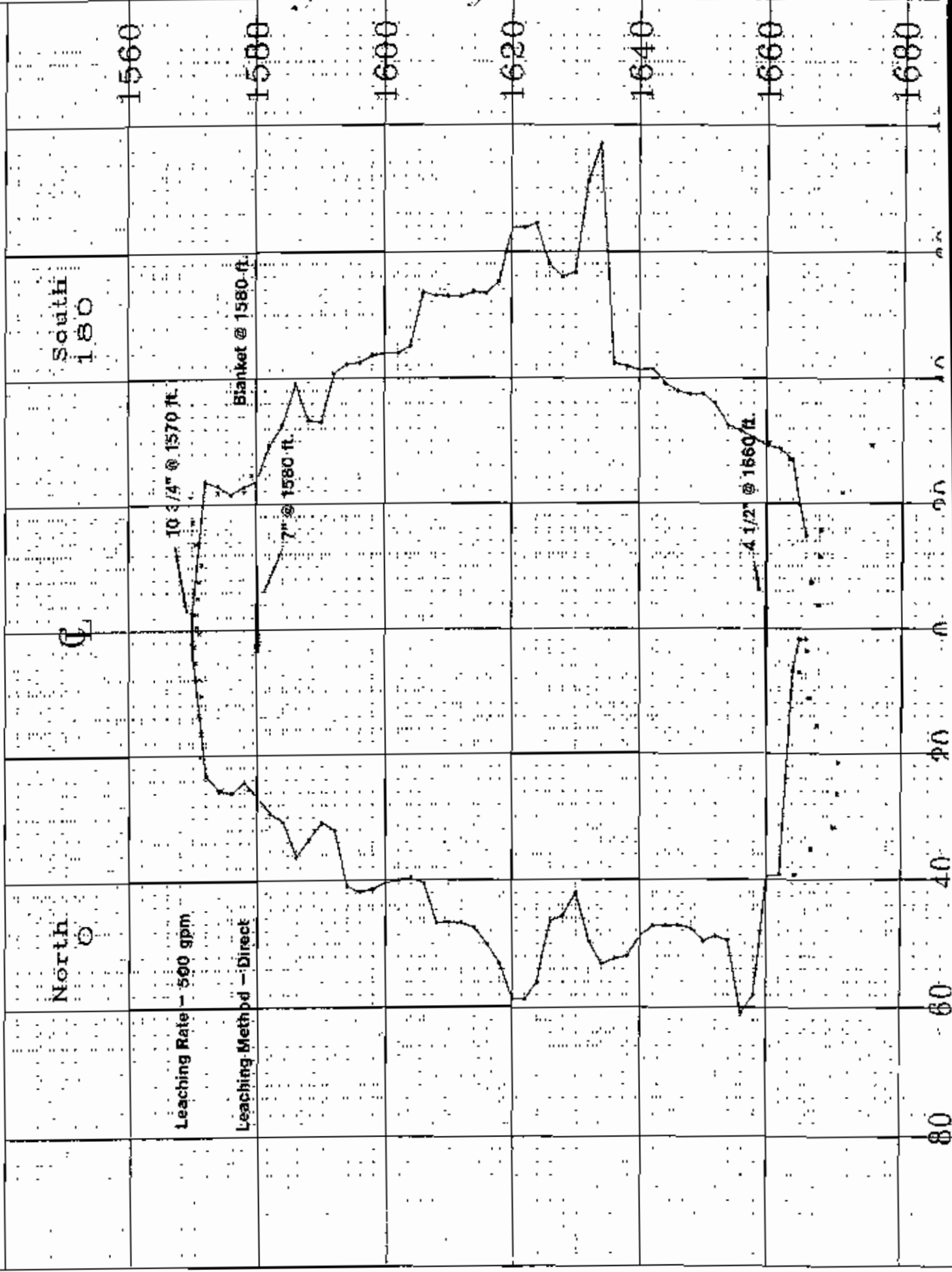
Well No. 4

VERTICAL CROSS SECTION

Inkster, Michigan

July 21, 1993

Job Number - 2677

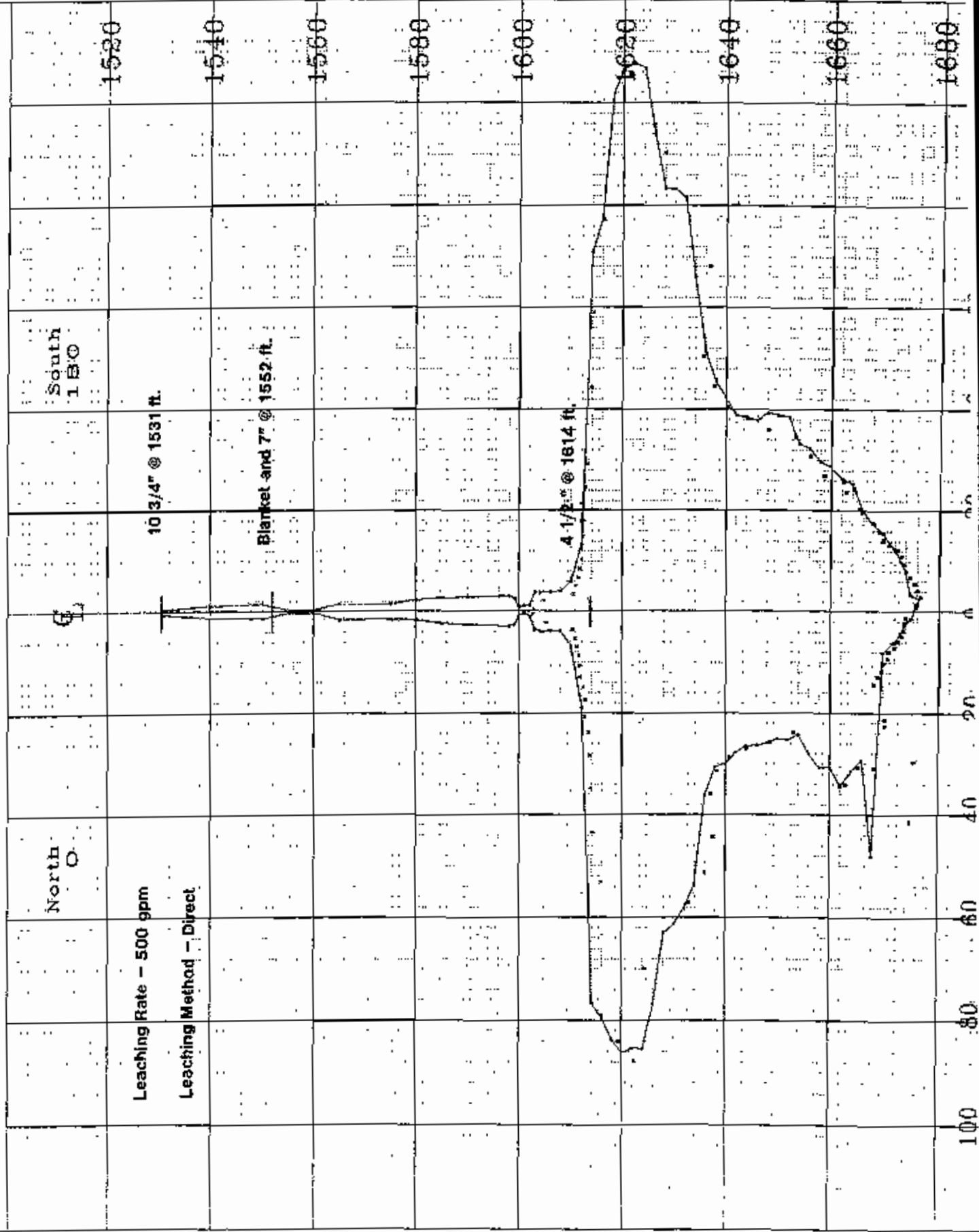


Cavern 5

Piperite Co.
Well No. 5

Okst., Mi.
April 3, 1996
Job Number - 3069

VERTICAL CROSS SECTION



SUN PIPE LINE COMPANY WELL NO. 5

INITIAL SONAR VOLUME = 106,286
 Gross Volume Leached = 325,804
 Net Volume Increase = 283,307
 Final Cavern Volume = 389,593

DIRECT CIRCULATION
 FLOW RATE = 600 GPM
 LEACHING TIME 270 DAYS

CELL	CELL HEIGHT	DEPTH	RADIUS	CELL SG	PLUME SG	PLUME GPM	ANGLE	CELL BBLs	ACCUM. BBLs
32	63	1551	112.11	1.12	1.12	3349.9	62.6	14065.7	14065.7
31	61	1553	111.07	1.12	1.12	3339.3	64.0	13606.5	27672.2
30	59	1555	110.16	1.12	1.12	3323.3	63.9	13579.5	41451.6
29	57	1557	109.12	1.12	1.12	3302.1	63.9	13324.2	54775.8
28	55	1559	108.20	1.12	1.12	3275.7	64.7	13100.1	67975.9
27	53	1561	107.23	1.13	1.12	3244.3	60.2	12867.2	80743.2
26	51	1563	105.90	1.13	1.12	3208.1	57.3	12550.8	93294.0
25	49	1565	104.86	1.13	1.12	3167.0	61.6	12257.8	105551.8
24	47	1567	103.74	1.13	1.12	3121.0	65.3	12043.8	117595.6
23	45	1569	102.82	1.13	1.12	3070.2	61.9	11830.6	129426.2
22	43	1571	101.61	1.13	1.12	3014.7	62.2	11553.2	140978.4
21	41	1573	100.71	1.13	1.12	2954.3	66.8	11349.2	152328.8
20	39	1575	99.89	1.13	1.12	2889.1	64.6	11168.2	163494.6
19	37	1577	98.80	1.13	1.12	2819.2	62.4	10924.6	174419.4
18	35	1579	97.79	1.13	1.12	2744.5	62.9	10702.5	185121.9
17	33	1581	96.75	1.13	1.12	2665.0	63.6	10476.1	195598.0
16	31	1583	95.61	1.13	1.12	2580.7	58.7	10272.5	205870.5
15	29	1585	94.32	1.13	1.12	2491.8	51.5	9956.0	215826.5
14	27	1587	92.62	1.14	1.12	2388.1	50.6	9601.0	225427.4
13	25	1589	91.04	1.14	1.12	2289.6	50.2	9275.3	234702.7
12	23	1591	89.29	1.14	1.11	2196.2	52.9	8921.2	243623.9
11	21	1593	88.01	1.14	1.11	2087.3	65.4	8668.0	252291.9
10	19	1595	87.46	1.14	1.11	1972.6	63.4	8569.3	260851.2
9	17	1597	87.54	1.14	1.11	1851.2	128.4	8576.7	269427.9
8	15	1599	90.62	1.14	1.11	1722.3	130.6	8190.0	278617.9
7	13	1601	90.97	1.14	1.1	1585.9	92.3	9260.9	287878.8
6	11	1603	90.79	1.14	1.1	1440.9	100.5	9222.4	297101.2
5	9	1605	91.71	1.15	1.1	1286.0	107.5	9412.8	306514.1
4	7	1607	92.04	1.15	1.09	1119.8	92.1	9480.8	315994.9
3	5	1609	91.86	1.15	1.08	938.4	102.1	8442.4	325437.2
2	3	1611	92.90	1.15	1.05	736.9	81.6	9658.2	335095.4
1	1	1613	91.27	1.16	1	497.0	50.8	9321.2	344416.6
		1620	98.44					10522.0	354938.6
		1622	98.51					10644.0	365882.6
		1624	97.81					10903.0	376785.6
		1626	86.83					9633.0	386418.6
		1628	73.84					7285.0	393703.6
		1630	72.28					6044.0	399747.8
		1632	70.08					5744.0	405491.6
		1634	57.90					4608.0	410099.6
		1636	44.44					2959.0	413058.6
		1638	38.20					1958.0	415024.6
		1640	35.99					1588.0	416810.8
		1642	34.08					1422.0	418032.8
		1644	32.55					1316.0	419348.6
		1646	31.85					1240.0	420588.6
		1648	31.40					1193.0	421781.6
		1650	31.18					1169.0	422950.6
		1652	31.36					1149.0	424099.6
		1654	29.48					1062.0	425181.6
		1656	31.40					1036.0	426247.6
		1658	30.16					1152.0	427399.6
		1660	29.40					1060.0	428459.6
		1662	24.83					889.0	429448.6
		1664	23.15					728.0	430076.6
		1666	20.81					578.0	430654.6
		1668	27.33					698.0	431353.6
		1670	11.64					505.0	431858.6
		1672	8.70					142.0	432000.6
		1674	5.84					76.0	432076.6
		1675	2.43					13.0	432089.6

Cavern 7



SUN PIPE LINE COMPANY WELL NO. 7

INITIAL SONAR VOLUME = 123,078
 Gross Volume Leached = 935,309
 Net Volume Increase = 813,312
 Final Cavern Volume = 938,390

DIRECT CIRCULATION
 FLOW RATE = 600 GPM
 LEACHING TIME = 810 DAYS

CELL	CELL HEIGHT	DEPTH	RADIUS	CAVERN SG	PLUM SG	PLUM GPM	ANGLE	CELL BBLs	ACCUM. BBLs
57	111.02	1515.98	114.50	1.15	1.15	6777.8	119.2	14429.4	14429.4
56	109.05	1517.95	115.68	1.15	1.15	5772.1	115.8	14707.8	29137.2
55	107.09	1519.91	116.46	1.15	1.15	5763.7	76.8	14911.9	44049.1
54	105.12	1521.88	114.74	1.15	1.15	5753.0	47.8	14474.3	58523.4
53	103.16	1523.84	112.87	1.15	1.15	5740.0	54.5	14005.8	72529.2
52	101.18	1525.81	111.94	1.15	1.15	5724.4	69.3	13776.7	86305.9
51	99.23	1527.77	111.38	1.15	1.15	5706.3	73.9	13639.9	99946.9
50	97.26	1529.74	110.81	1.15	1.15	5685.7	73.9	13496.9	113444.8
49	95.3	1531.70	110.26	1.15	1.15	5662.7	68.4	13363.6	126809.6
48	93.33	1533.67	109.26	1.15	1.15	5637.3	67.3	13123.1	139931.7
47	91.37	1535.63	108.60	1.15	1.15	5609.4	76.2	12967.4	152889.0
46	89.4	1537.60	108.29	1.15	1.15	5579.1	93.2	12892.4	165791.4
45	87.44	1539.58	108.82	1.15	1.15	5546.0	129.0	13019.8	178811.1
44	85.47	1541.53	111.47	1.15	1.15	5510.2	122.3	13680.3	192471.4
43	83.51	1543.49	111.31	1.15	1.15	5472.0	73.5	13621.8	206093.1
42	81.54	1545.46	110.30	1.15	1.15	5431.0	127.2	13378.3	219489.4
41	79.58	1547.42	114.29	1.15	1.15	5387.6	66.3	14381.2	233880.6
40	77.61	1549.39	108.67	1.15	1.15	5342.6	24.1	12890.3	246790.9
39	75.65	1551.35	105.49	1.15	1.15	5295.1	83.8	12236.6	259028.6
38	73.68	1553.32	108.14	1.15	1.15	5245.0	122.0	12858.0	271884.5
37	71.72	1555.28	107.95	1.16	1.15	5191.7	142.5	12911.2	284696.7
36	69.75	1557.25	113.27	1.16	1.15	5134.9	180.2	14106.2	298801.9
35	67.79	1559.21	118.84	1.16	1.15	5074.3	158.1	15526.7	314328.6
34	65.82	1561.18	123.03	1.16	1.15	5009.9	158.9	16641.5	330970.0
33	63.86	1563.14	128.03	1.16	1.15	4941.5	164.8	18304.6	349274.6
32	61.89	1565.11	137.53	1.16	1.15	4870.2	54.7	20794.9	370069.5
31	59.93	1567.07	126.25	1.16	1.15	4796.6	37.1	17523.1	387692.6
30	57.98	1569.04	132.32	1.16	1.15	4719.0	154.5	19260.8	406953.4
29	56	1571.00	134.49	1.18	1.15	4637.0	170.9	19887.7	426731.0
28	54.04	1572.98	158.85	1.16	1.15	4551.4	85.3	27083.6	453814.6
27	52.07	1574.93	134.17	1.16	1.15	4463.2	40.8	19792.5	473607.1
26	50.11	1576.89	152.37	1.16	1.15	4370.1	186.8	25524.8	499131.9
25	48.14	1578.88	158.84	1.16	1.15	4273.8	68.2	26048.0	524180.0
24	46.18	1580.82	148.73	1.16	1.15	4175.0	20.1	24849.4	548829.3
23	44.21	1582.79	140.21	1.16	1.15	4073.6	30.7	21614.9	570444.3
22	42.25	1584.75	143.11	1.16	1.15	3968.4	121.1	22518.7	592963.0
21	40.28	1586.72	142.58	1.16	1.15	3859.3	118.9	22351.3	615314.2
20	38.32	1588.68	145.26	1.16	1.15	3746.2	128.4	23206.0	638520.2
19	36.36	1590.65	145.89	1.16	1.15	3629.1	84.8	23337.2	661857.4
18	34.39	1592.61	144.81	1.16	1.14	3506.0	97.8	23088.0	684845.4
17	32.42	1594.58	146.23	1.16	1.14	3382.8	74.9	23510.3	708455.7
16	30.46	1596.54	143.85	1.16	1.14	3259.6	70.4	22750.1	731205.7
15	28.49	1598.51	144.83	1.18	1.14	3119.7	81.4	23062.8	754268.6
14	26.53	1600.47	143.85	1.16	1.14	2980.6	136.6	22781.6	777050.0
13	24.56	1602.44	146.83	1.16	1.14	2835.6	140.3	24362.6	801402.6
12	22.6	1604.40	148.68	1.17	1.14	2685.3	78.5	24304.3	825706.9
11	20.63	1606.37	148.03	1.17	1.14	2530.0	48.5	24090.9	849797.8
10	18.67	1608.33	145.32	1.17	1.14	2389.5	34.4	23218.0	873016.8
9	18.7	1610.30	142.29	1.17	1.13	2203.6	30.3	22258.9	895274.7
8	14.74	1612.26	138.60	1.17	1.13	2031.3	41.7	21119.4	918394.1
7	12.77	1614.23	137.87	1.17	1.13	1851.5	93.3	20887.6	937291.6
6	10.81	1616.19	138.83	1.17	1.12	1682.8	91.0	21188.1	950480.9
5	8.84	1618.16	137.93	1.17	1.12	1484.9	25.8	20917.1	979398.0
4	6.88	1620.12	130.88	1.17	1.11	1255.8	21.3	18776.3	988174.3
3	4.91	1622.08	127.86	1.17	1.09	1032.4	15.4	17972.7	1016147.0
2	2.95	1624.05	115.41	1.17	1.07	788.1	11.4	14898.7	1031045.6
1	0.98	1626.02	108.41	1.17	1	499.3	13.8	12920.7	1043966.3
		1628	70.15					6159	1050125.3
		1630	37.74					3444	1053569.3
		1632	29					1290	1054859.3
		1634	25.64					860	1055719.3
		1636	23.53					698	1056417.3
		1638	19.83					573	1056990.3
		1640	17.28					453	1057443.3
		1642	13.53					363	1057806.3
		1644	13.53					581	1058387.3

Sun Pipe Line Company

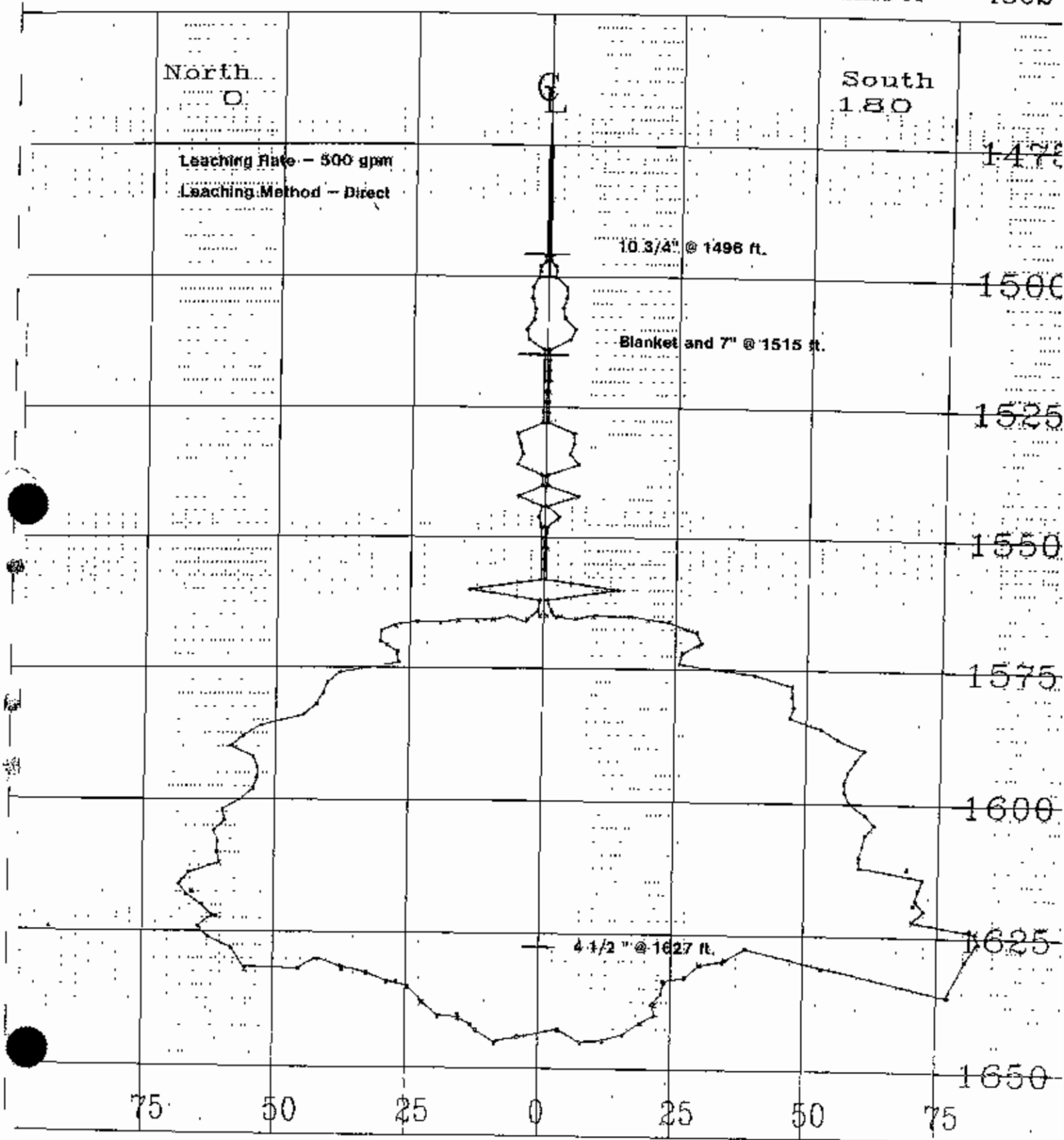
Inkster, Michigan

Well No: 7

VERTICAL CROSS SECTION

April 4, 1995

Job Number - 4362



Cavern 9



SUN PIPE LINE COMPANY WELL NO. 9

DIRECT CIRCULATION
 FLOW RATE 500 GPM
 LEACHING TIME 510 DAYS

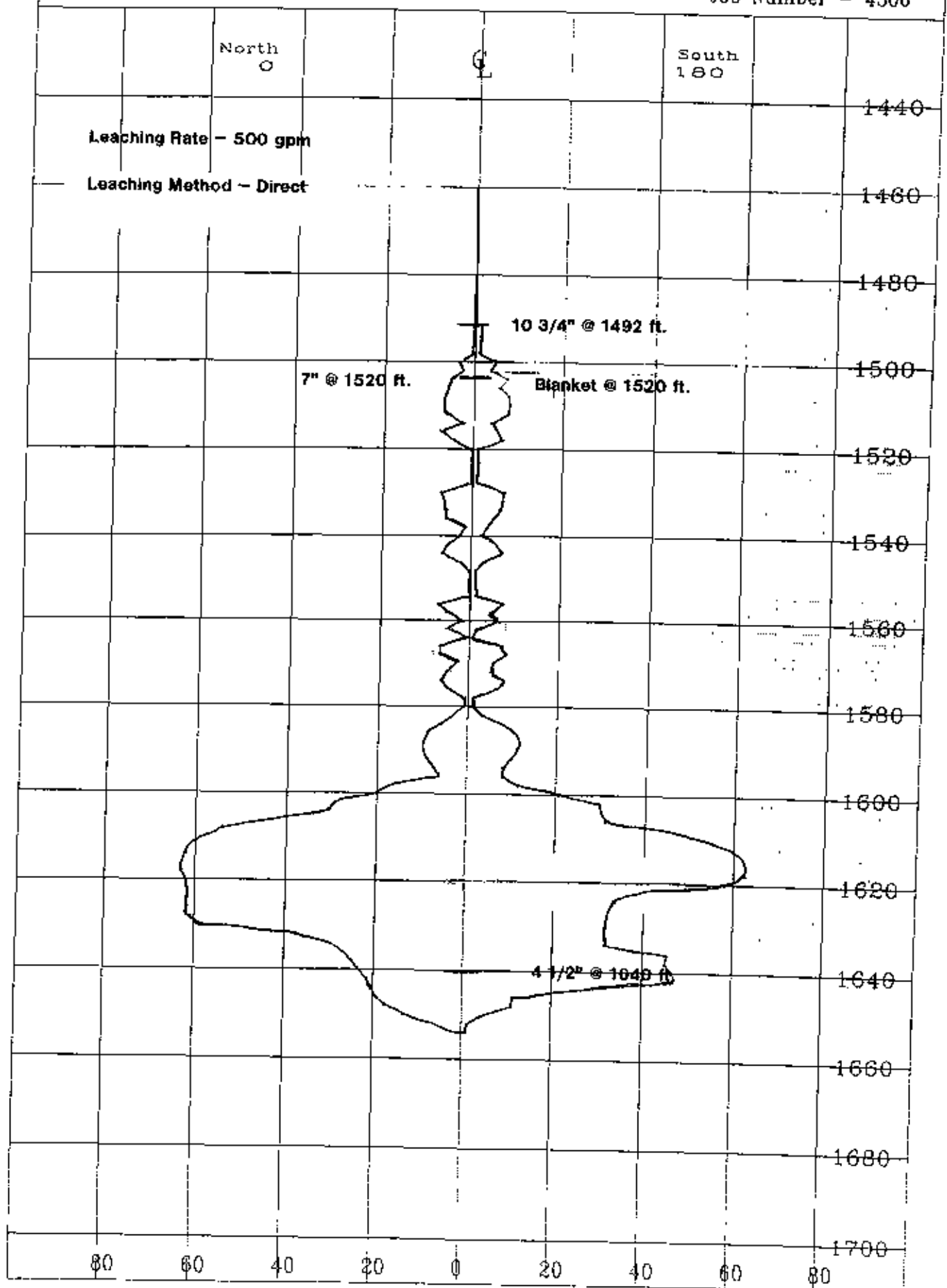
AL SONAR VOLUME = 5,000
 Gross Volume Leached = 909,828
 Net Volume Increase = 790,981
 Final Cavern Volume = 850,837

CELL	CELL HEIGHT	DEPTH	RADIUS	CAVERN SG	PLUME SG	PLUME GPM	ANGLE	CELL BBLs	ACCUM. BBLs
81	119.02	1520.98	120.91	1.15	1.15	2470.6	50.8	16091.1	16,091.1
80	117.06	1522.95	118.3	1.15	1.15	8197.3	81.4	15688.4	31,757.5
59	115.08	1524.92	118.78	1.15	1.15	6189.2	96.0	15525.1	47,282.6
58	113.11	1526.89	119.71	1.15	1.15	8178.4	100.3	15774.6	83,057.2
57	111.15	1528.85	119.47	1.15	1.15	6184.9	80.2	15711.8	78,769.1
56	109.18	1530.82	119.03	1.15	1.15	6149.0	60.9	15598.4	94,365.5
55	107.21	1532.79	117.28	1.15	1.15	8130.8	51.5	15140.6	109,508.1
54	105.25	1534.75	115.91	1.15	1.15	6109.9	113.3	14787.9	124,294.0
53	103.28	1536.72	118.88	1.15	1.15	6085.6	141.3	15581.0	139,875.0
52	101.31	1538.69	120.81	1.15	1.15	6058.6	100.3	18068.2	155,941.2
51	99.34	1540.66	119.89	1.15	1.15	6029.5	41.4	15768.1	171,709.3
50	97.38	1542.62	116.35	1.15	1.15	5998.4	39.5	14900.7	186,610.0
49	95.41	1544.59	114.91	1.15	1.15	5964.7	110.1	14535.6	201,145.6
48	93.44	1546.56	117.79	1.15	1.15	5928.3	107.6	15272.3	216,417.9
47	91.48	1548.52	118.16	1.15	1.15	5889.6	73.2	14853.2	231,271.1
46	89.51	1550.49	116.6	1.15	1.15	5847.9	133.6	14968.1	246,237.2
45	87.54	1552.46	119.91	1.15	1.15	5803.8	68.7	15827.1	262,064.3
44	85.57	1554.43	114.91	1.15	1.15	5758.0	26.4	14534.8	278,599.1
43	83.61	1556.39	111.97	1.15	1.15	5710.2	43.2	13800.5	290,399.6
42	81.64	1558.36	110.72	1.16	1.15	5659.9	89.0	13493.5	303,893.1
41	79.67	1560.33	111.9	1.16	1.15	5607.3	81.5	13783.8	317,676.9
40	77.70	1562.30	110.13	1.16	1.15	5552.3	74.9	13351.1	331,028.1
39	75.74	1564.28	110.84	1.16	1.15	5494.7	127.0	13523.8	344,551.8
38	73.77	1566.23	113.1	1.16	1.15	5433.9	138.3	14079.8	358,631.5
37	71.80	1568.20	115.26	1.16	1.15	5369.8	137.4	14623.2	373,254.7
36	69.84	1570.18	117.38	1.16	1.15	5302.9	130.9	15168.9	388,421.6
35	67.87	1572.13	118.67	1.16	1.15	5233.8	42.2	15501.1	403,922.7
34	65.90	1574.10	113.04	1.16	1.15	5162.9	28.2	14088.4	417,999.1
33	63.93	1576.07	111.33	1.16	1.15	5089.5	81.5	13641.9	431,831.0
32	61.97	1578.03	112.46	1.16	1.15	5013.4	127.7	13920.9	445,551.9
31	60.00	1580.00	114.36	1.16	1.15	4933.9	137.0	14398.5	459,949.4
30	58.03	1581.97	116.88	1.16	1.15	4851.0	144.3	14984.7	474,933.1
29	56.07	1583.93	119.85	1.16	1.15	4784.4	150.5	15810.2	490,743.3
28	54.10	1585.90	123.62	1.16	1.15	4674.0	153.8	18821.1	507,564.4
27	52.13	1587.87	127.76	1.16	1.15	4579.7	152.0	17968.1	525,532.6
26	50.16	1589.84	131	1.16	1.15	4481.4	150.2	18890.8	544,423.4
25	48.20	1591.80	134.84	1.16	1.15	4378.8	151.1	19953.7	564,377.1
24	46.23	1593.77	138.14	1.16	1.15	4271.9	152.9	21005.5	585,382.6
23	44.26	1595.74	142.34	1.16	1.15	4160.4	156.8	22300.6	607,683.3
22	42.30	1597.70	147.31	1.16	1.15	4044.2	158.5	23884.8	631,568.0
21	40.33	1599.67	152.34	1.16	1.15	3923.4	136.0	25548.4	657,114.5
20	38.36	1601.64	151.24	1.16	1.15	3798.8	76.2	25178.5	682,293.0
19	36.39	1603.61	151.38	1.16	1.14	3670.1	72.8	25223.2	707,516.2
18	34.43	1605.57	150.02	1.16	1.14	3538.6	18.9	24773.6	732,289.8
17	32.46	1607.54	139.9	1.16	1.14	3404.1	17.6	21542.3	753,832.0
16	30.49	1609.51	137.8	1.16	1.14	3265.6	72.3	20839.9	774,671.9
15	28.52	1611.48	138.64	1.16	1.14	3123.6	22.2	21156.8	795,828.7
14	26.56	1613.44	127.94	1.16	1.14	2977.9	37.2	18017.2	813,845.9
13	24.59	1615.41	133.45	1.16	1.14	2827.3	97.7	19602.4	833,448.3
12	22.62	1617.38	126.47	1.17	1.14	2672.7	24.4	18166.2	851,614.5
11	20.66	1619.34	124.79	1.17	1.14	2513.9	21.7	17140.3	868,754.8
10	18.69	1621.31	118.58	1.17	1.13	2350.7	17.4	15477.5	884,232.3
9	16.72	1623.28	112.19	1.17	1.13	2182.7	17.5	13855.4	898,087.7
8	14.75	1625.25	106.08	1.17	1.13	2009.4	19.3	12382.6	910,470.2
7	12.79	1627.21	100.98	1.17	1.12	1829.8	29.9	11223.1	921,693.3
6	10.82	1629.18	99.21	1.17	1.12	1642.3	60.8	10833.1	932,526.4
5	8.85	1631.15	98.78	1.17	1.11	1446.2	22.5	10739.8	943,266.0
4	6.89	1633.11	89.71	1.17	1.11	1240.0	10.4	8859.3	952,125.3
3	4.92	1635.08	77.3	1.17	1.09	1020.4	15.0	6578.5	958,701.8
2	2.95	1637.05	75	1.17	1.08	780.7	17.2	8191.9	964,893.7
1	0.98	1639.02	64.58	1.17	1	499.3	10.7	4590.2	969,483.9

Sun Pipeline Company
LPG Well No. 9

VERTICAL CROSS SECTION

Inxster, Michigan
April 27, 1994
Job Number - 4306



APPENDIX D

Cavern Leaching Simulations

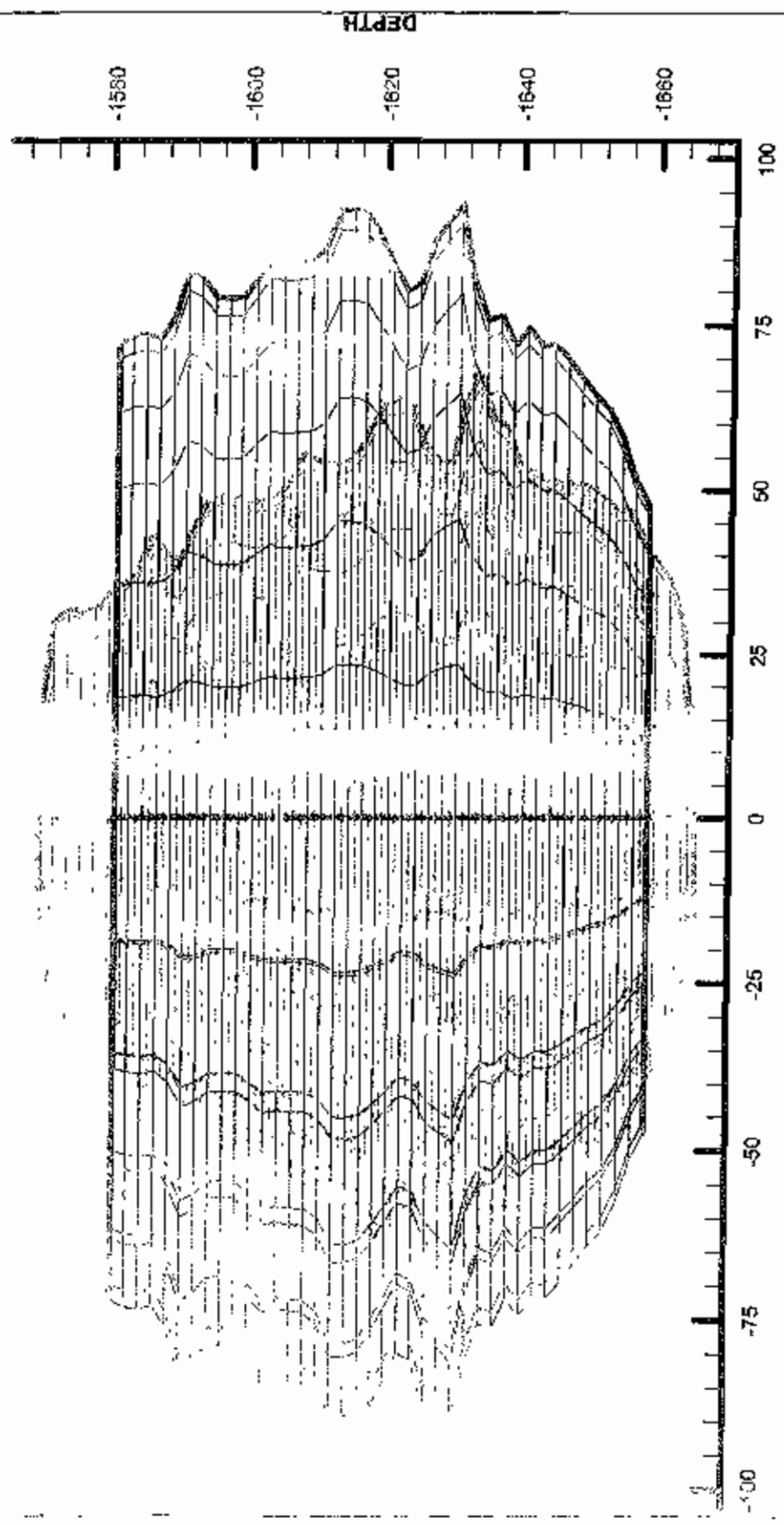
Cavern 4

Cavern 5

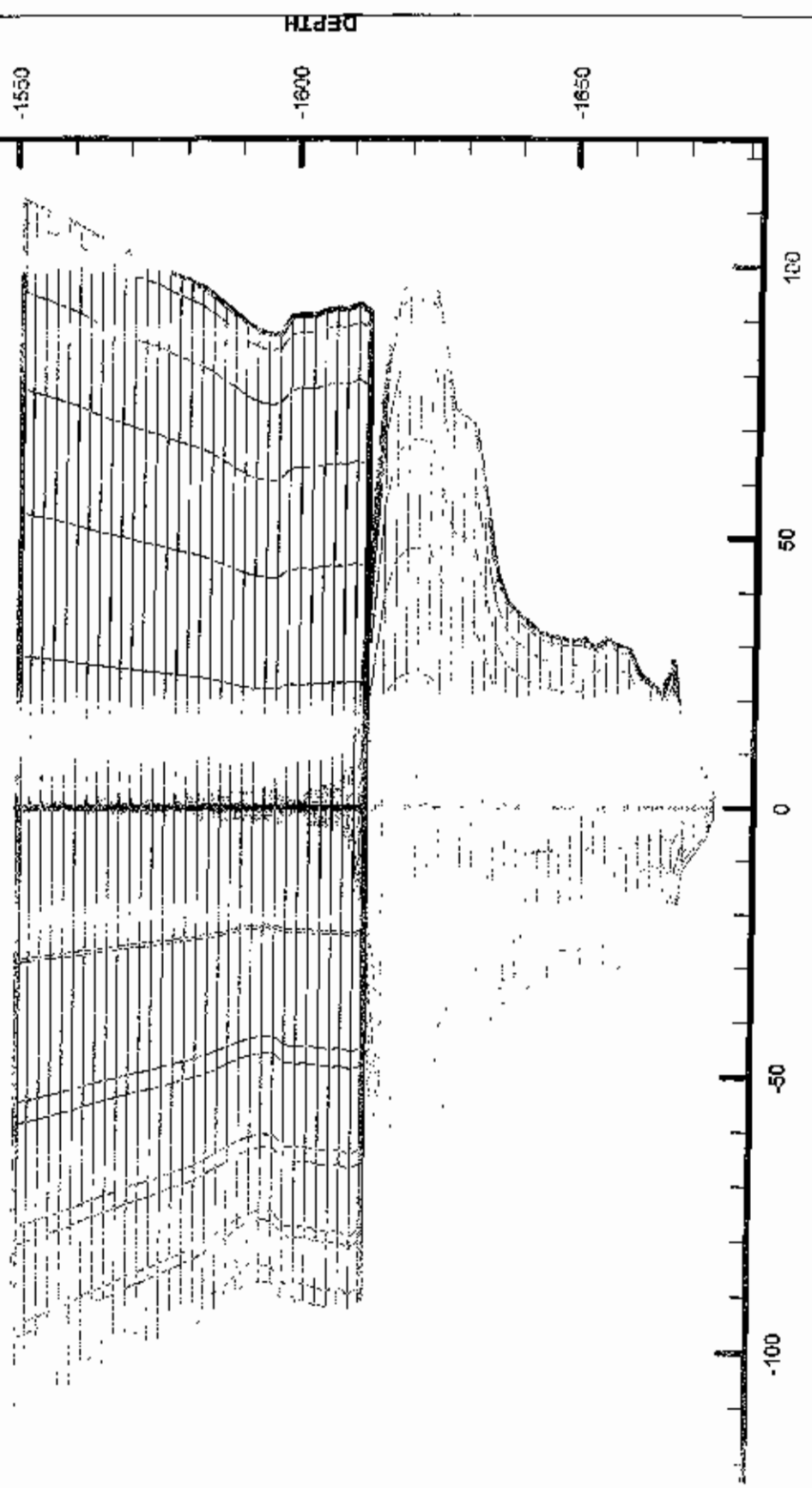
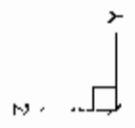
Cavern 7

Cavern 9

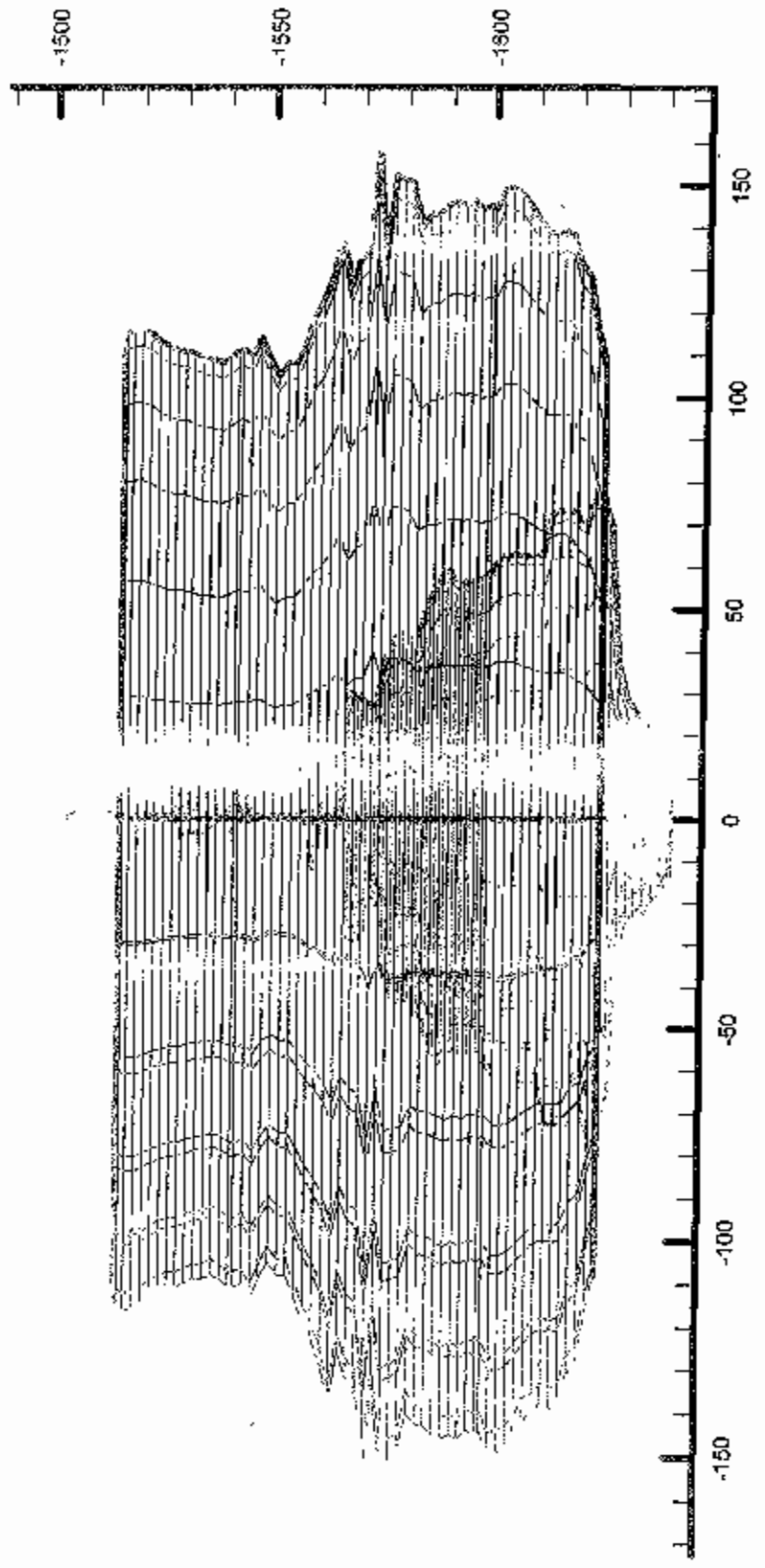
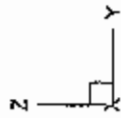




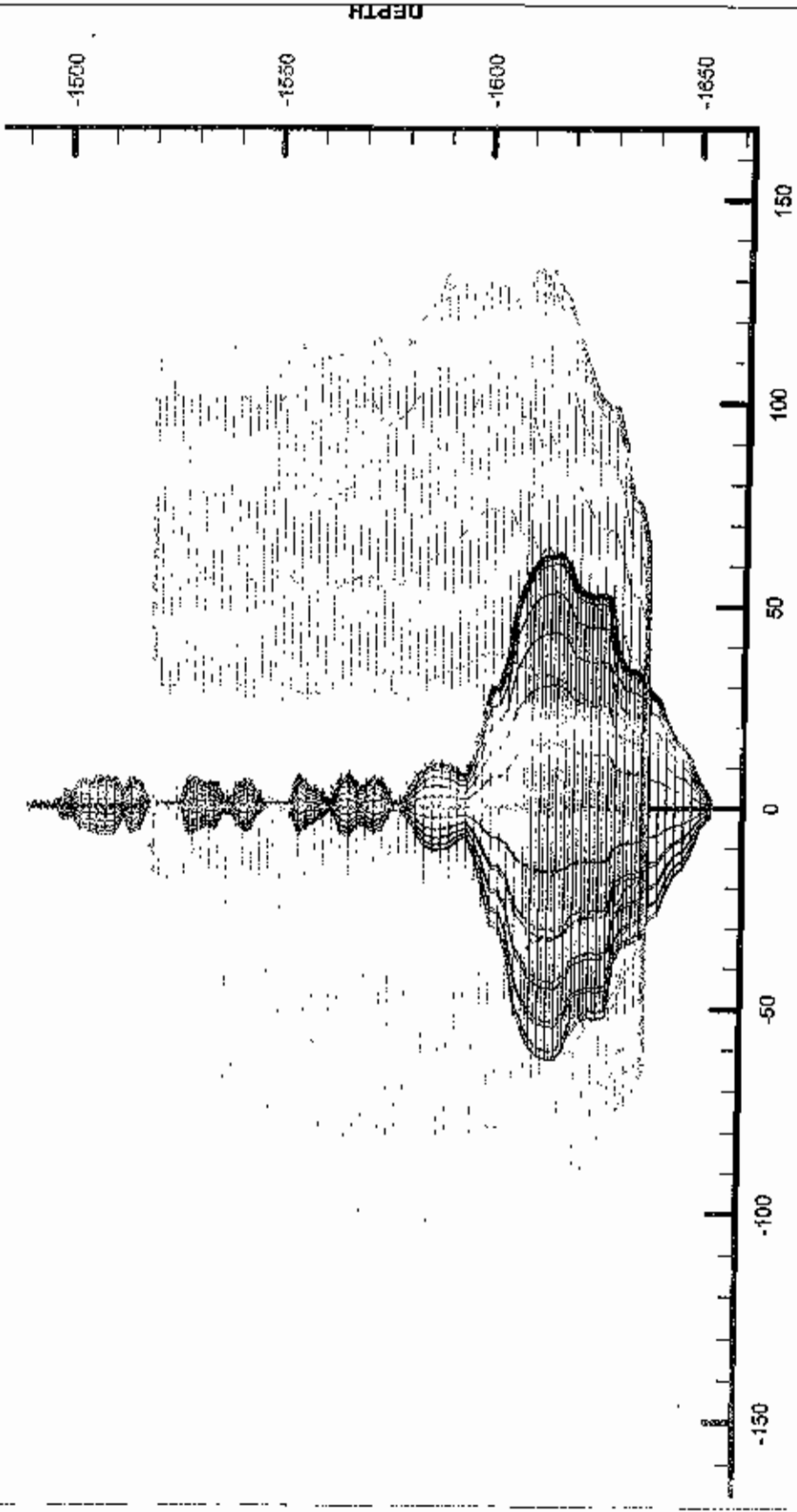
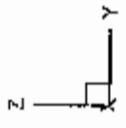
CAVERN RADII'S



CAVERN RADIUS



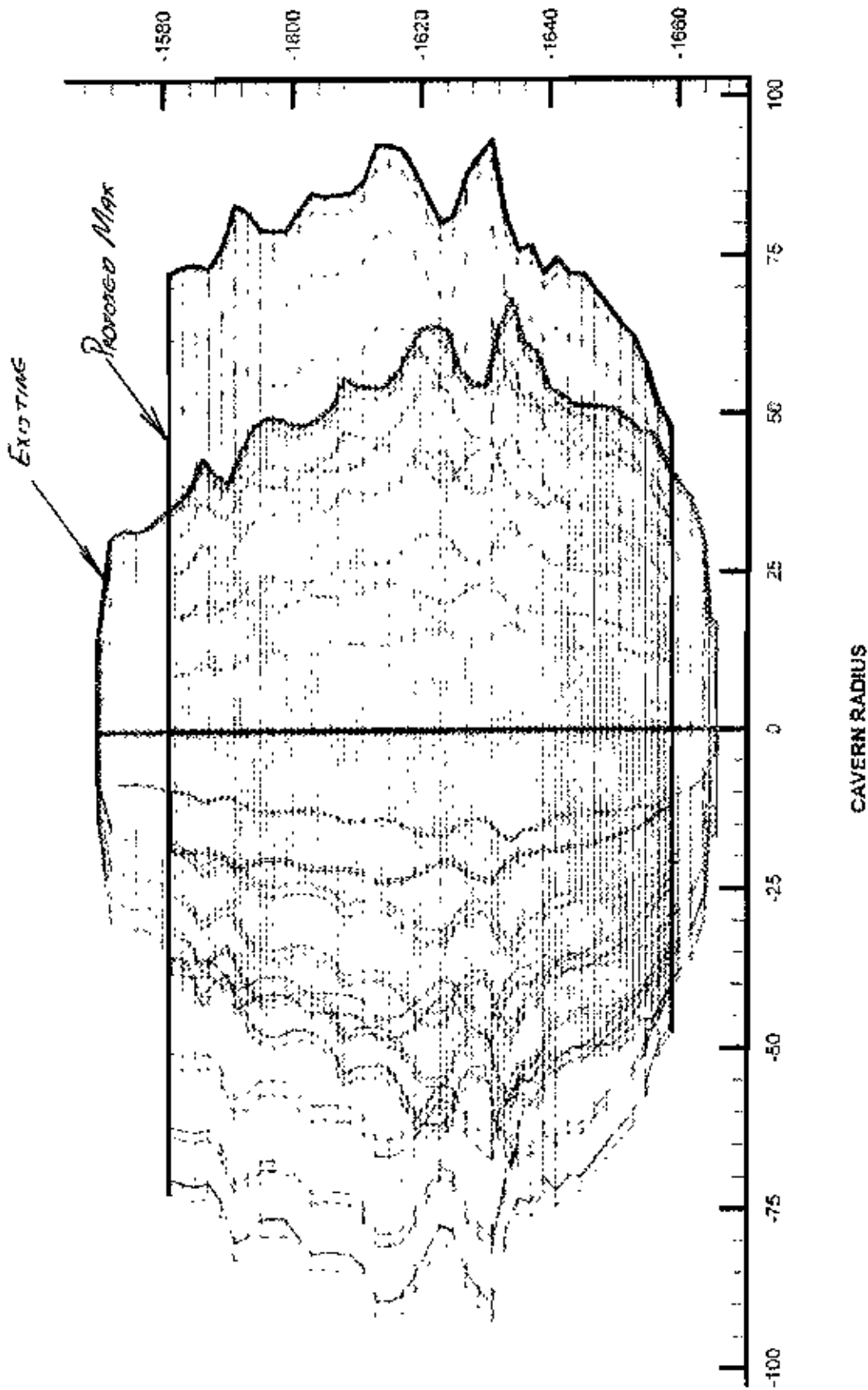
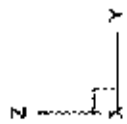
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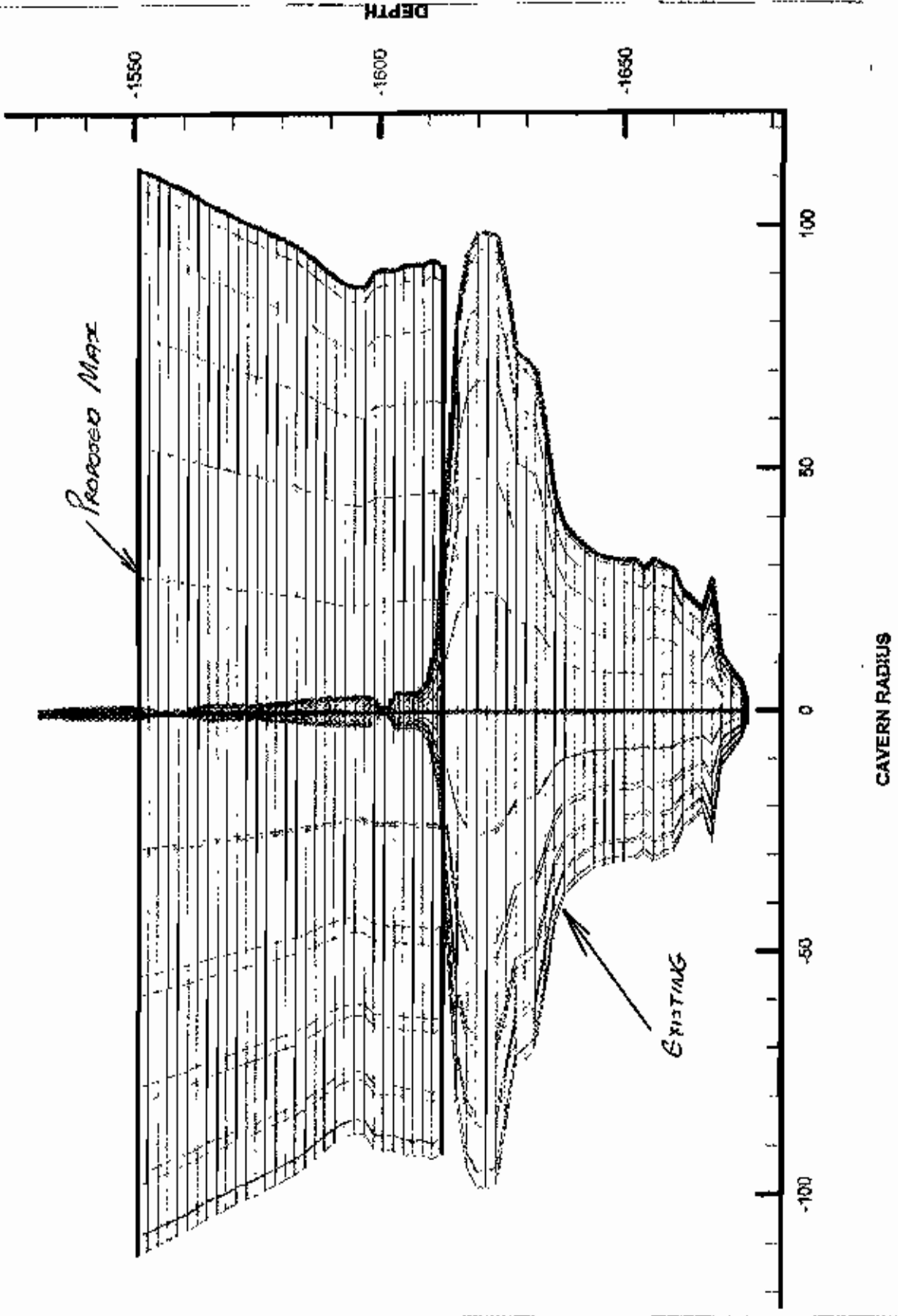
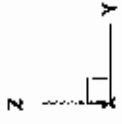
CAVERN RADIUS

DEPTH

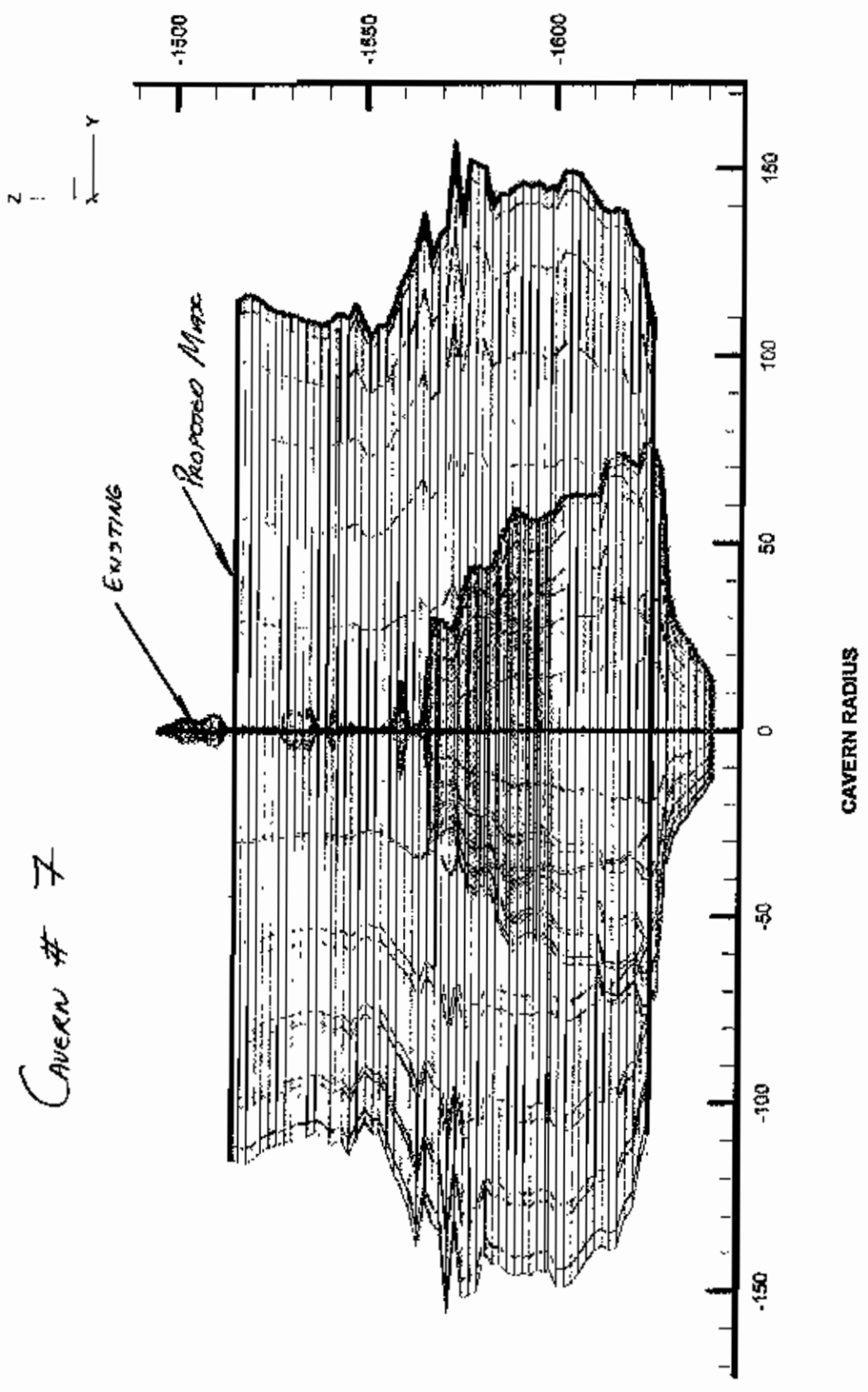
CAVERN # 4



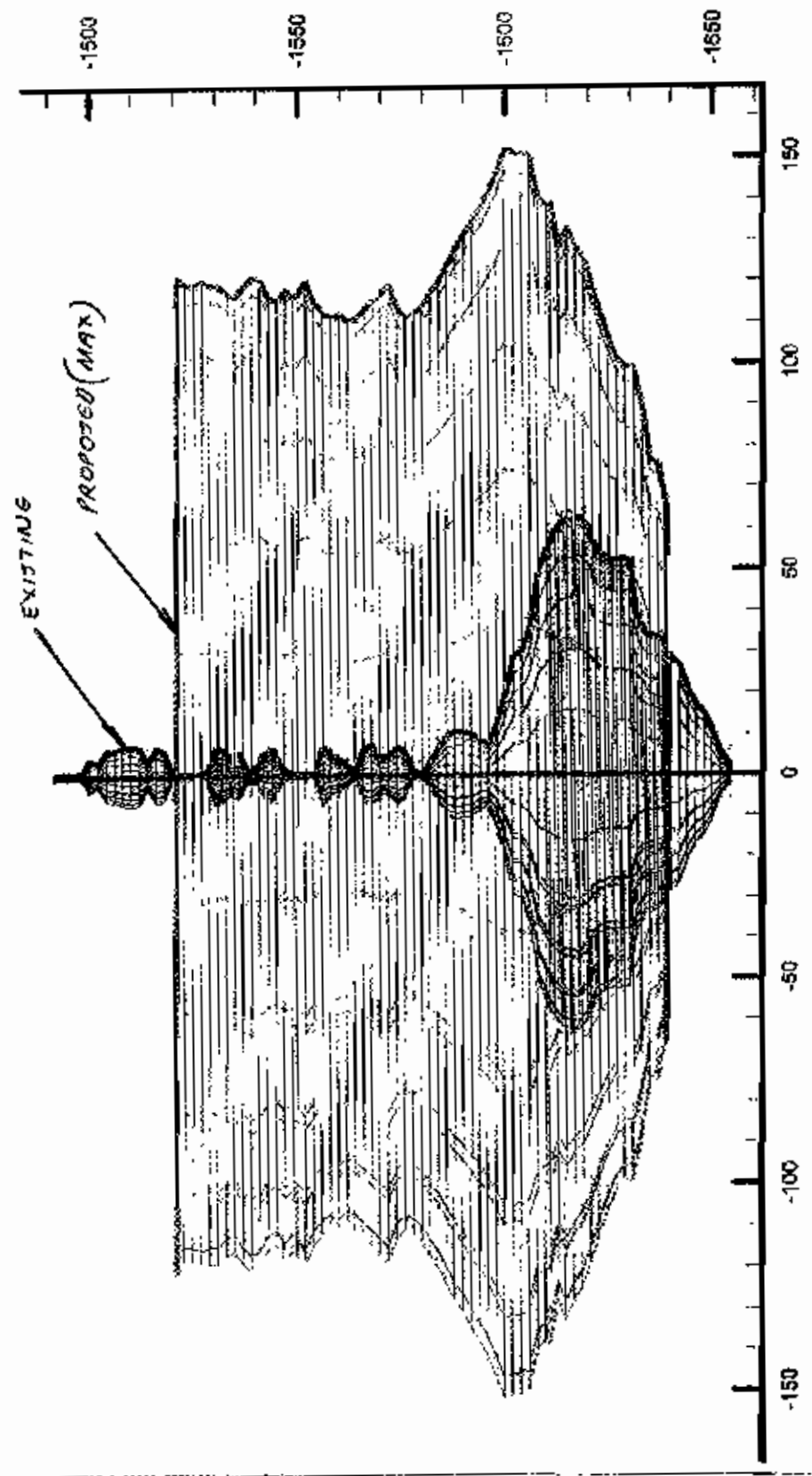
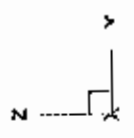
CAVERN # 5



CAVERN # 7



CAVERN # 9



9

N. Changes in injected fluids

*Brine (attached typical
MSDS sheet) and water*



SUMMARY: CHANGE OF INJECTED FLUIDS

Sunoco Partners Terminal and Marketing LLP.
7155 Inkster Road, Taylor, MI 48180.

PRESENTLY: Use of brine from existing ponds to displace LPG's from caverns and vice versa.

PROPOSED: Expansion of caverns # 4, 5, 7 and 9 using fresh water as a 'solvent' for the existing salt formations, displacing the LPG's from caverns..

DETAILS:

PRESENTLY: Brine is used to displace the LPG's (propane, butane, iso-butane) stored in the existing 8 operational caverns (numbered #1 to #9 with #8 being out of service).

The existing facility has two 500,000BBL brine ponds located within the property. These act as brine supplies and reservoirs.

When LPG deliveries are made to the facility, they are pumped into the caverns via an existing network of pipelines. This product displaces the brine resident in the caverns, which is then piped into the brine ponds via a flow through 10,000BBL brine tank that acts like a transition vessel.

When LPG movement out of the caverns is desired, brine from the existing above ground ponds is pumped, via two existing pumps, P11 and P14, into the caverns. This displaces the LPG's from the caverns into the existing pipeline system, which are in turn piped to various locations throughout the pipeline system.

PROPOSED: Use fresh water to displace the LPG's in the caverns targeted for expansion ONLY. All other caverns shall remain in the existing BRINE / LPG service under same conditions. One pond shall be designated to accommodate the caverns not slated for expansion.

When LPG movements are required out of the caverns, we shall inject fresh water into the existing caverns slated for expansion via the existing pumps, P11 and P14. This fresh water shall displace the LPG's, which will then be piped to their final destination.

The fresh water will reside in the cavern for a period of time (+/- 6 months) causing leeching of the caverns and thus expand them. The leeching will convert the fresh water into water containing leached salt, becoming (leached) brine from the cavern formation. Cavern characteristics including pressure shall be monitored at all times and fluid movement controlled to facilitate safe cavern operations. Brine concentrations and scheduled sonar tests will determine the actual cavern growth rate and volume.

Months later when LPG deliveries into the (same) caverns are desired, the leached brine (originally fresh water) resident in the caverns shall be displaced by the LPG's from the pipeline. The leached brine shall be pumped into the existing ponds via the flow through tank.

However, since the existing facility can only accommodate approximately 1,000,000 BBLs of brine storage, it will be necessary to dispose of this brine into the proposed 'Brine Disposal Well' permitted under MI-DEQ and US-EPA.

Any additional brine not available from the ponds shall be obtained from a proposed brine production well.

=====

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

REVISION DATE 08/18/1992
UN NUMBER-

PRIMARY APPLICATION-

MANUFACTURER- SUN COMPANY, INC.
TEN PENN CENTER
1801 MARKET STREET
PHILADELPHIA PA 19103-1624SYNONYMS..... SODIUM REFERENCE STANDARD; SS-139; ACC40180
CAS REGISTRY NO: 1310-58-3
CAS NAME..... SODIUM CHLORIDE
CHEMICAL FAMILY. SODIUM CHLORIDE SOLUTION
INFORMATIONSUPPLIER... STEVEN MCDANIEL
PHONE..... (215) 977-6133

EMERGENCY PHONE NUMBERS (AFTER NORMAL BUSINESS HOURS)

24HR PHONE. 1-800-964-8861

CHEMTREC. 1-800-424-9300

*** SECTION 2 - INGREDIENTS ***

SODIUM CHLORIDE CAS #1310-58-03, 5%; WATER 95%.
'INGREDIENTS WITH * IN CAS NUMBER ARE SUBJECT TO REPORTING REQUIREMENTS OF
SECTION 313 EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW AND 40CFR372'

*** SECTION 3 - PHYSICAL DATA ***

BOILING POINT... : 212 (DEG F) 100 (DEG C)
MELTING POINT..... 37 (DEG F) 0 (DEG C)
SPECIFIC GRAVITY.... 1.0 (H2O=1)
PACKING DENSITY..... N.A. (KG/M3)
VAPOR PRESSURE..... 14 (MM HG AT 20C)
VAPOR DENSITY..... .7 (AIR=1)
SOLUBILITY IN WATER.: COMPLETE (% BY VOL)
PH INFORMATION..... N.D. AT CONC. N.D. G/L H2O
% VOLATILES BY VOL.: N.D.
EVAPORATION RATE.... > 1 (ETHYL ETHER=1)
OCTANOL/WATER COEFF.: N.D.
APPEARANCE..... COLORLESS LIQUID
ODOR..... N.D.
ODOR THRESHOLD..... N.D. (PPM)

*** SECTION 4 - FIRE AND EXPLOSION DATA ***

FLASH POINT WILL NOT IGNITE (DEG. F) WILL NOT IGNITE (DEG. C)
AUTOIGNITION TEMP. WILL NOT IGNITE (DEG. F) WILL NOT IGNITE (DEG. C)---NFPA CLASSIFICATION--- -----HAZARD RATING-----
HEALTH - 0 0 - LEAST 3 - HIGH
FIRE - 0 1 - SLIGHT 4 - EXTREME
REACTIVITY 0 2 - MODERATE

SPECIFIC HAZARD CERCLA RATING

---FLAMMABLE LIMITS IN AIR---

LOWER EXPLOSIVE LIMIT (LEL) WILL NOT IGNITE % VOL

UPPER EXPLOSIVE LIMIT (UEL) WILL NOT IGNITE % VOL.

FIRE AND EXPLOSION HAZARDS -----

NONCOMBUSTIBLE

EXTINGUISHING MEDIA -----

WATER FOG. MECHANICAL FOAM. ALCOHOL FOAM. DRY CHEMICAL POWDER. CARBON
DIOXIDE.

SPECIAL FIRE FIGHTING INSTRUCTIONS----

WEAR SELF-CONTAINED BREATHING APPARATUS WHEN FIRE FIGHTING IN CONFINED
SPACE.

*** SECTION 5 - HEALTH HAZARD INFORMATION ***

EXPOSURE LIMITS----- NOT DETERMINED

*** ROUTES OF EXPOSURE AND EFFECTS ***

INHALATION -----

NOT DETERMINED/ NO DATA.

SKIN -----

NO SKIN EFFECTS EXPECTED.

EYE -----

CONTACT WITH THE EYE MAY CAUSE MINIMAL IRRITATION.

INGESTION -----

NOT DETERMINED/ NO DATA.

*** FIRST AID ***

INHALATION -----

NOT DETERMINED/ NO DATA.

SKIN -----

NOT DETERMINED/ NO DATA.

EYE -----

FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF IRRITATION PERSISTS,
OBTAIN MEDICAL ASSISTANCE.

INGESTION -----

NOT DETERMINED/ NO DATA.

*** SECTION 6 - REACTIVITY DATA ***

STABILITY-----

STABLE.

CONDITIONS TO AVOID: STABLE UP TO BOILING
POINT, APPROXIMATELY 100C/212F

INCOMPATIBLE MATERIALS-----

WATER-REACTIVE SUBSTANCES: OLEUM,
SODIUM

HAZARDOUS DECOMPOSITION-----

PRODUCTS: N.D.

POLYMERIZATION-----

WILL NOT OCCUR.

*** SECTION 7 - SPECIAL PROTECTION INFORMATION ***

VENTILATION -----

NONE NORMALLY NEEDED.

*** PERSONAL PROTECTIVE EQUIPMENT ***

EYE -----

SPASH PROOF CHEMICAL GOGGLES RECOMMENDED

GLOVES -----

GLOVES RECOMMENDED

RESPIRATOR -----

NONE NORMALLY NEEDED

OTHER -----

NOT DETERMINED/ NO DATA

*** SECTION 8 - DISPOSAL PROCEDURES ***

AQUATIC TOXICITY -----

KEEP OUT OF SEWERS, WATERWAYS AND WATER SOURCES.

SPILL, LEAK OR RELEASE-----

ABSORB ON INERT MATERIAL. SHOVEL, SWEEP OR VACUUM SPILL.

WASTE DISPOSAL METHOD-----

FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS. CONTRACT TO AUTHORIZED
DISPOSAL SERVICE.

*** SECTION 9 - SPECIAL PRECAUTIONS ***

STORAGE AND HANDLING CONDITIONS---

AVOID PROLONGED BREATHING OF MIST OR VAPOR.

N.D. - Not Determined

N/A - No Data Available

*** SECTION 10 - ADDITIONAL PRECAUTIONS AND LABELS ***

THE TOXICITY OF THIS SODIUM CHLORIDE SOLUTION HAS NOT BEEN QUANTIFIED.

O. Plans for well failures –
Attached



Sunoco Logistics

LPG Storage #4, #5, #7 or #9

Plans for Well Failures

6-16-2004

Van Wagnen Engineering

Industrial and Petroleum Consulting

849 West Dansville Rd. Mason Michigan 48854

(517) 676-1888 E-Mail JoeVan@Sofjourn.com

Plans for Well Failures

The following procedure will be followed in the event of a well failure during the cavern washing phase.

1. Washing will be stopped and the cavern well will be shut in.
2. EPA Region 5 and MDEQ will be notified by phone within 24 hours and EPA in writing within 5 days.
3. A contingency plan will be prepared and include the following steps. The mode of well failure will be identified. We will prepare a RAP and will submit the RAP to EPA Region 5 and MDEQ for approval.
4. After receiving authorization from EPA Region 5 and the MDEQ, the RAP will be implemented and the cavern well will be repaired.
5. If required mechanical integrity will be demonstrated to the EPA inspector. The results of the mechanical integrity test will be forwarded to EPA Region 5.
6. After receiving written authorization to continue operations from EPA Region 5 and the MDEQ, washing or storage into the well will be started.

P. Monitoring program

Use of current existing safety and alarm mechanisms. Also, see operation procedure



SUMMARY: OPERATIONS and PROPOSED EXPANSION.
Sunoco Partners Terminal and Marketing LLP.
7155 Inkster Road, Taylor, MI 48180.

Inkster Terminal

Introduction

The salt caverns are non-pressurized, solution-mined voids in the natural salt stratum. LPGs are added or removed from the caverns by means of brine displacement. Brine fills the bottom of the cavern; LPG product fills the upper area of the cavern. Because the specific gravity of brine is approximately twice that of LPG's, the weight of the brine in the brine tube contains the LPGs in the cavern. To add product into a cavern, pumping increases the pressure in the product line. As product pressure becomes greater than the pressure produced by the weight of the brine at the bottom of the brine tube, the brine level in the cavern is pushed lower and brine is pushed up the brine tube and into the brine flare tank located on the ground surface. Conversely, when product is removed from a cavern, the resulting drop in product pressure allows the heavier brine to flow back down into the cavern from the surface brine ponds.

Cavern Mechanical Integrity

Currently: The caverns and the mechanical appurtenances are on a 10-year inspection cycle. Included in the inspection would be to sonar the caverns, inspection of the casing and tubing, repair, replace, update wellhead equipment.

Proposed: During expansion, sonar on each cavern will be done at closer intervals to more accurately determine cavern expansion rates.

Safety devices

Each cavern wellhead has an EMERGENCY SHUT DOWN (ESD) valve that is set up to close the associated piping should any abnormal conditions occur in the cavern or associated piping.

In addition, there are sensors (Ohmart) detectors on the brine lines that sense the presence of any LPG's in the brine stream. These alarm the station, activating appropriate action, including but not limited to, shut down can be initiated.

Each cavern wellhead has a stand-alone LPG sensor that detects the presence of any LPG's in the atmosphere. They alarm the facility activating the appropriate response including but not limited to shutdown. In addition, there are perimeter vapor detectors that act as secondary detectors though-out the facility.



SUMMARY: OPERATIONS and PROPOSED EXPANSION.
Sunoco Partners Terminal and Marketing LLP.
7155 Inkster Road, Taylor, MI 48180.

Emergency Procedures and Response

- Operators and supervisors participate in all emergency drills for the facility or the Region.
- All Operators are a Level II, First Responder Operations under the Hazwoper regulation. Interactive training involving employees covers recognition of a release, alert operations, evacuate area, contain or control spill, select Personal Protective Equipment (PPE), decontamination.
- Routine walk through from local emergency response crews including the cities of Taylor and Romulus.

INKSTER CAVERN DATA

Cavern #	Max. Capacity net barrels	Flow Rate bph	Temp. Deg. F	Max. Brine Inlet Pressure	Cavern Minimum Pressure	Max. Receiving Pressure
1	100,443	400-2000	0 - 100	313 psi	325 psi	750 psi
2	158,921	400-2000	0 - 100	318 psi	340 psi	750 psi
3	120,000	400-2000	0 - 100	306 psi	360 psi	750 psi
4	135,423	400-2000	0 - 100	416 psi	450 psi	750 psi
5	123,138	400-2000	0 - 100	397 psi	450 psi	750 psi
6	160,000	400-2000	0 - 100	315 psi	335 psi	750 psi
7	117,100	400-2000	0 - 100	372 psi	460 psi	750 psi
9	59,856	400-2000	0 - 100	377 psi	445 psi	750 psi

Procedure Notes:

Caverns are normally filled to 2000 barrels from maximum capacity. Caverns are normally considered empty when there is 2000 barrels of inventory remaining in the cavern. The risk of introducing brine into the pipeline, resulting in contamination or corrosion problems, is possible if inventories are taken below the 2000 barrel level. Any movement in or out of the caverns, above or below, these limits requires management approval and a "cavern watch" (physical presence at the well head to monitor pressure gauges).

Maximum brine discharge pressure is limited due to the pressure exerted on the cavern casing shoe. API recommends 1 psi for every foot of overburden times a safety factor of 0.8.

Cavern minimum pressures represent the cavern at static conditions. Pressures can be lower than this when the cavern is completely emptied. Maximum receiving pressure is limited to 750 psi on the casing to protect the cavern casing shoe.

Flow rates are limited to 750 bph when making a change of product from one cavern to another. Once the cavern change has been made the rate can be increased to the scheduled rate. Rates are reduced to protect



SUMMARY: OPERATIONS and PROPOSED EXPANSION.
Sunoco Partners Terminal and Marketing LLP.
7155 Inkster Road, Taylor, MI 48180.

→ 6.7 bpm to 25 bpm

the cavern hanging tubing from sudden movements due to rate and pressure that could damage the handing tubing. Flow rates are considered normal between 400 bph and 1500 bph. Rates below 400 bph are not measured accurately, and rates above 1500 bph are approaching the upper limits of the turbine meter accuracy. Temperatures are considered normal between 0 degrees F, and 100 degrees F, however, most product temperatures are between 30 degrees F and 90 degrees F.

Brine Tank

Target brine flow through an existing 10,000 BBLS brine tank (tank #4) before we put the brine into the ponds. The tank acts like a precautionary flow through vessel as it has LPG detectors on it.

There are also LPG detectors (OHMART) on the individual brine lines at the cavern wellhead

Q. Plugging and
abandonment plan –
Attached



Sunoco Logistics

LPG Storage #4

MDEQ Permit # 20404

Plugging Procedure

6-16-2004

Van Wagnen Engineering

Industrial and Petroleum Consulting

840 West Hansville Rd. Mason Michigan 48854

(517) 676-1888 E-Mail JoeVan@sojourn.com

Procedure

1. Move in service rig and rig up. Haul in 2 sets of pipe racks and 1650' of 2 7/8" rental tubing. Haul in 100 bbl half pit.
2. Unpack wellhead. Trip out of hole with 3 1/2" tubing.
3. Trip in hole with 10 3/4" Bridge Plug on 2 7/8" Tubing. Set Bridge Plug at 1560 feet.
4. Install 2 7/8" stripper head on wellhead. Run kelly hose from backside to half pit.
5. Rig up Cement rite and tie onto tubing. Establish circulation. Spot 240 sacks Class A cement from 1560-1060'. Trip out of hole to 1060'. Spot 240 sacks Class A cement from 1060-560'. Trip out of hole to 560'. Spot 290 sacks Class A cement from 560-0'. Trip out of hole. Top off cement to 3' below grade.
6. Rig down and move out service rig and equipment.
7. Cut off all casings 3' below grade and weld on a 1/2" steel plate. Weld DEQ permit number on cap.
8. Restore location.
9. Prepare and file EPA and DEQ Plugging Reports.



Sunoco Logistics

LPG Storage #5

MDEQ Permit # 21521

Plugging Procedure

6-16-2004

Van Wagnen Engineering

Industrial and Petroleum Consulting

849 West Bensonville Rd. Mason Michigan 48854

(517) 676-1886 E-Mail JoeVan@Sajourn.com

Procedure

1. Move in service rig and rig up. Haul in 2 sets of pipe racks and 1600' of 2 7/8" rental tubing. Haul in 100 bbl half pit.
2. Unpack wellhead. Trip out of hole with 3 1/2" tubing.
3. Trip in hole with 10 3/4" Bridge Plug on 2 7/8" Tubing. Set Bridge Plug at 1530 feet.
4. Install 2 7/8" stripper head on wellhead. Run kelly hose from backside to half pit.
5. Rig up Cement rite and tie onto tubing. Establish circulation . Spot 240 sacks Class A cement from 1530-1030'. Trip out of hole to 1030'. Spot 240 sacks Class A cement from 1030-530'. Trip out of hole to 530'. Spot 250 sacks Class A cement from 530-0'. Trip out of hole. Top off cement to 3' below grade.
6. Rig down and move out service rig and equipment.
7. Cut off all casings 3' below grade and weld on a 1/2" steel plate. Weld DEQ permit number on cap.
8. Restore location.
9. Prepare and file EPA and DEQ Plugging Reports.



Sunoco Logistics

LPG Storage #7

MDEQ Permit # 26443

Plugging Procedure

6-16-2004

Van Wagnen Engineering

Industrial and Petroleum Consulting

849 West Danville Rd. Mason Michigan 48854

(517) 676-1886 E-Mail JoeVan@Sojourn.com

Procedure

1. Move in service rig and rig up. Haul in 2 sets of pipe racks and 1550' of 2 7/8" rental tubing. Haul in 100 bbl half pit.
2. Unpack wellhead. Trip out of hole with 3 1/2" tubing.
3. Trip in hole with 10 3/4" Bridge Plug on 2 7/8" Tubing. Set Bridge Plug at 1497 feet.
4. Install 2 7/8" stripper head on wellhead. Run kelly hose from backside to half pit.
5. Rig up Cement rite and tie onto tubing. Establish circulation . Spot 240 sacks Class A cement from 1497-997'. Trip out of hole to 997'. Spot 240 sacks Class A cement from 997-497'. Trip out of hole to 497'. Spot 240 sacks Class A cement from 497-0'. Trip out of hole. Top off cement to 3' below grade.
6. Rig down and move out service rig and equipment.
7. Cut off all casings 3' below grade and weld on a 1/2" steel plate. Weld DEQ permit number on cap.
8. Restore location.
9. Prepare and file EPA and DEQ Plugging Reports.



Sunoco Logistics

LPG Storage #9

MDEQ Permit # 29090

Plugging Procedure

6-16-2004

Van Wagnen Engineering

Industrial and Petroleum Consulting

849 West Dansville Rd. Mason Michigan 48854

(517) 676-1886 E-Mail JoeVan@Sojourn.com

Procedure

1. Move in service rig and rig up. Haul in 2 sets of pipe racks and 1550' of 2 7/8" rental tubing. Haul in 100 bbl half pit.
2. Unpack wellhead. Trip out of hole with 3 1/2" tubing.
3. Trip in hole with 10 3/4" Bridge Plug on 2 7/8" Tubing. Set Bridge Plug at 1482 feet.
4. Install 2 7/8" stripper head on wellhead. Run kelly hose from backside to half pit.
5. Rig up Cement rite and tie onto tubing. Establish circulation . Spot 240 sacks Class A cement from 1482-982'. Trip out of hole to 982'. Spot 240 sacks Class A cement from 982-482'. Trip out of hole to 482'. Spot 240 sacks Class A cement from 482-0'. Trip out of hole. Top off cement to 3' below grade.
6. Rig down and move out service rig and equipment.
7. Cut off all casings 3' below grade and weld on a 1/2" steel plate. Weld DEQ permit number on cap.
8. Restore location.
9. Prepare and file EPA and DEQ Plugging Reports.

R. Necessary resources

(To be submitted under separate cover)

*(TO BE SUBMITTED UNDER
SEPARATE COVER)*

Formation is currently used for LPG storage.
Project involves expanding 4 existing
caverns to increase LPG storage volume

● S. Aquifer exemptions

T. Existing EPA permits

N/A

U. Description of business -
Attached



II. FACILITY SPECIFIC:

Sunoco Logistics L.P. has a facility addressed at 7155 Inkster Road, Taylor, MI 48180. This facility is physically located at the junction of Ecorse and Inkster Roads within the cities of Romulus and Taylor in Wayne County, southeast Michigan.

The facility is a pipeline terminal used for the storage and distribution of Liquefied Petroleum Gasses (LPG's). Storage is in eight (8) working caverns, which have a total storage capacity of about ONE MILLION BARRELS of LPG's. The caverns range in size from 60,000 BBLS to 165,000 BBLS. The first cavern was leached in 1946 and the last capacity enlargement was in 1973. The bulk source of the LPG's stored at this facility originate from Sunoco's Toledo Refinery.

The site has nine (9) caverns solution mined from the SALINAS salt formation. Four of the operating caverns are in the "F" salt layer at 1,175 feet to 1,280 feet and four are in the "B" salt layer at 1,510 feet to 1,730 feet. Sunoco is looking at expanding the latter group. One cavern, # 8, has been plugged and abandoned.

SIC Code that best describes this activity is 2911 - PETROLEUM REFINING.



LEGEND

- ★ Seneca Mill Industry
- 1976 Census Code
- 1976 Census Code
- Eastern Paper, Inc.
- Yellow Stone Paper, Inc.
- West Shore Paper, Inc.
- Southern Paper, Inc.
- West Coast Paper, Inc.
- ◆ Northeast & Midwest
- ◆ Portland
- △ Number of Pulp Mills
- Number of Pulp Mills
- and other

Seneca Loggates

CALIFORNIA

NEW JERSEY

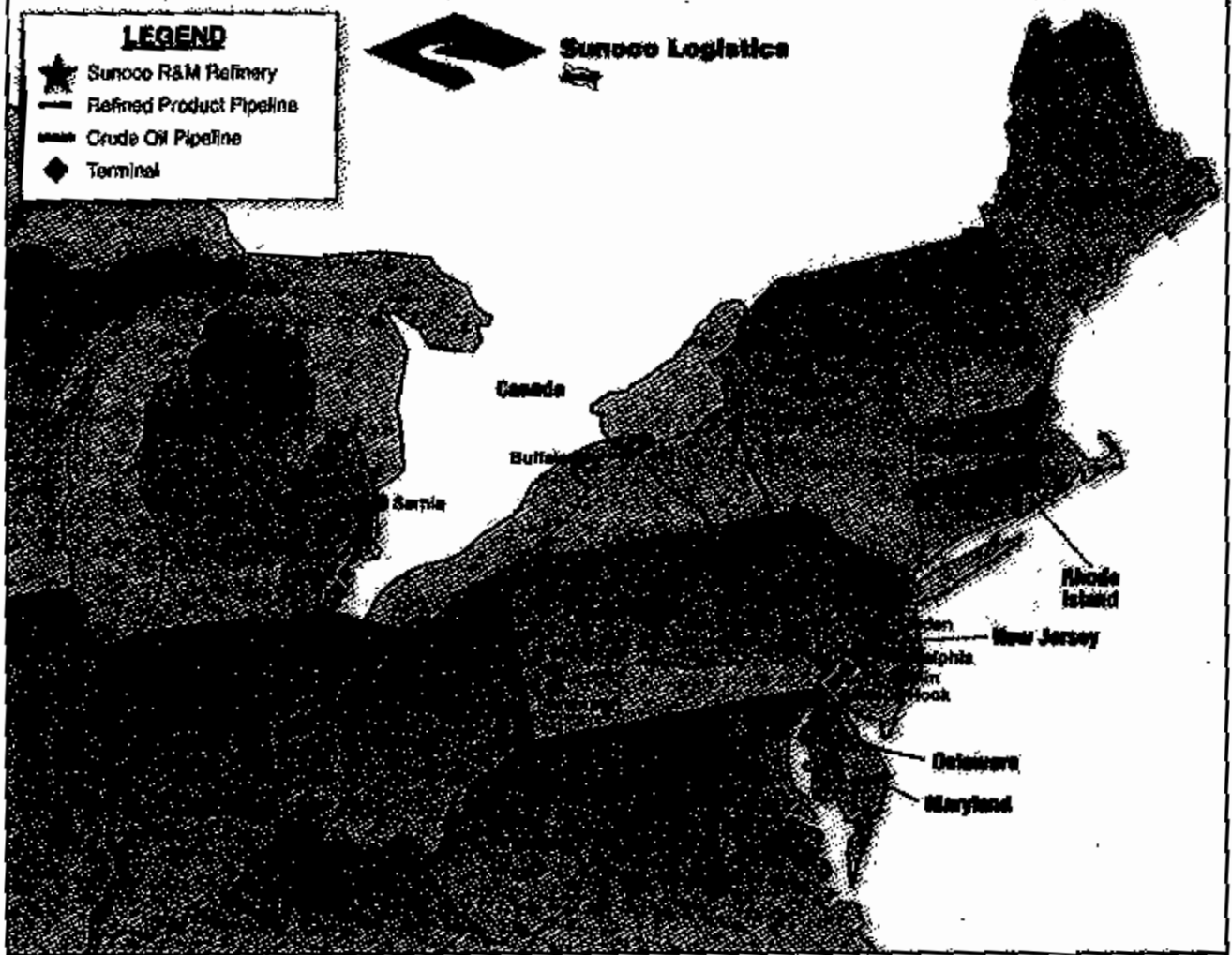
Portland, Maine

LEGEND

- ★ Sunoco R&M Refinery
- Refined Product Pipeline
- ▬ Crude Oil Pipeline
- ◆ Terminal



Sunoco Logistics



B

UICB CONTROL # 30
AS SIGN - ROGER HALL

WARNER NORCROSS & JUDD LLP
ATTORNEYS AT LAW
900 FIFTH THIRD CENTER
111 LYON STREET, N.W.
GRAND RAPIDS, MICHIGAN 49503-2487
TELEPHONE 616.752.2000
FAX 616.752.2500

RECEIVED

APR 11 2005

UIC BRANCH
EPA REGION 5

WILLIAM C. FULKERSON

616 752.2438
Direct Fax: 616.222.2438
wfulkerson@wnj.com

April 6, 2005

Attention: Lisa Perenchio
DI Section
U.S. Environmental Protection Agency
77 West Jackson Boulevard
WU-16J
Chicago, Illinois 60604-3590

Re: EPA Area Permit No. MI-163-3G-A002
Well #4, MDNR Permit #20404
Well #5, MDNR Permit #21521
Well #7, MDNR Permit #26443
Well #9, MDNR Permit #29090

To Whom It May Concern:

We represent Environmental Disposal Systems, Inc. (EDS) which has a facility near the proposed wells that will inject hazardous waste into the Mount Simon Formation. EDS is concerned about the proposal to use the above wells to solution mine a larger cavern for LPG storage.

The notice is unclear as to the interval involved in the project. The notice states there will be injection into a rock formation from "1,150 ft to 1800 feet below the ground surface". Is there going to be an attempt to solution mine between the two vertically separated caverns? We understood the wells are completed at 1,499 to 1570 feet and were developed in the "B" Salt which is separated by shale and anhydrite from the upper cavern. Is there to be solution mining of the upper level which is the "D" Salt? The notice appears to inaccurately describe the project.

EDS is concerned about the mining and the operation of the caverns. LPG is a highly volatile material that is both flammable and potentially explosive. Should that gas migrate out of the injection zone it will be under reduced pressure and change to a gaseous phase which is more mobile than the liquid. Any potential for migration out of the injection zone raises significant concerns both as to the potential contamination of USDW's or migration to a point where the gas could escape to the surface where it possibly could ignite or explode.

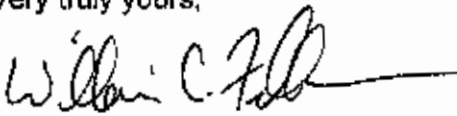
Lisa Perenchio
U.S. Environmental Protection Agency
DI Section
April 6, 2005
Page 2

Based upon the information available to us we understand the wells to be used are nearly 50 years old and constructed well before modern completion techniques were employed and the U.I.C. casing and sealing requirements were developed. The historic, long term use of the caverns can lead to spalling of the cavern roof. This can cause caving in some places. If the caving occurs near the casing it can threaten the integrity of the cement sealing the casing string. What measures have been taken to ensure the integrity of the cavern ceiling? We also have a concern about corrosion. These wells have been exposed to saturated brine for decades which could cause corrosion and threaten the integrity of the wells. What efforts will be made to monitor strata above the injection zone to ensure that LPG has not migrated behind the casing cement upward?

According to our engineers up to 400 million gallons of fresh water could be consumed to solution mine the caverns. This water is to be from the municipal system which is a part of the Metropolitan Detroit Sewer and Water Authority. Once the water is used in solution mining the caverns it will become saturated with salt and will be injected into the Mount Simon Formation. This water is no longer useable. The City water is obtained from Lake Huron. A consumptive use of this large a volume of Great Lakes water raises issues under the 2001 Great Lakes Charter Annex And the Great Lakes Charter of 1985. This is a significant volume of water to be lost from the Great Lakes Basin. Before this kind of use is to be permitted it should be determined whether or not the use violates the applicable requirements for large volume Great Lakes water usage.

This proposed use is one that requires close scrutiny because of its potential to harm the water resources of the area. It should be denied until such time as the safety of the project can be insured and the water use for mining determined to be consistent with the law.

Very truly yours,



William C. Fulkerson

ka/kks

c: Douglas F. Wicklund, President, Environmental Disposal Systems, Inc.

C

David A. Bower
Attorney at Law

10600 West Jefferson Ave. • River Rouge, Michigan 48218

RECEIVED
APR 07 2005
UIC BRANCH
EPA REGION 5

April 5, 2005

Attention: Lisa Perenchio
United States Environmental Protection Agency
DI Section
77 West Jackson Boulevard (WU-16J)
Chicago, Illinois 60604-3590

Re: EPA Area Permit No. MI-163-3G-A002
Well #4, MDNR Permit #20404
Well #5, MDNR Permit #21521
Well #7, MDNR Permit #26443
Well #9, MDNR Permit #29090

To Whom It May Concern:

Sunoco Partners Marketing & Terminals, LP of Taylor, Michigan has applied for a permit to operate the above four existing wells. These wells are to be used to inject fresh water into a rock formation and solution mine a salt layer to enlarge existing storage caverns. These underground caverns are to be used for liquid petroleum gas storage (LP gas). I represent clients who have considerable concerns about this activity. We request a public hearing because of the potential for serious impact on the property adjoining the facility and residents in the immediate area.

It is our understanding that the wells proposed to be used for injection are decades old and were not constructed to modern completion standards. We are informed that a limited amount of cement was used to secure the casing to the objective formation. We also understand that the casing was not cemented to the surface to prevent upward migration of fluids. We understand that the method of operation for these caverns was to use salt water to displace the stored LPG and then run the salt water out of the caverns as it is displaced by stored LPG. Over time this activity has the potential to dissolve the salt that is a containment barrier in the upper most part of the cavern. As the salt dissolves, the layer of rock above the cavern is exposed to the LPG and salt water. Salt water is highly corrosive of the well casing. Exposure of the cavern roof to salt water and LPG can lead to deterioration of the rock and caving which would damage the cement bond. When deterioration and caving is added to the corrosion of casing that could be expected,

there is a substantial possibility that fluids will migrate through the very short increment of cement separating the casing from the well bore. Any fluid that escapes the small, confining cement zone would be free to travel and migrate upward around the well casing. Because these wells are relatively shallow, there is a probability that either LPG or salt water could migrate to a potential, usable source of drinking water. Salt water will render the USDW non-potable. Should LP gas reach a USDW it, too, can be a source of contamination. If LP gas were to migrate outward and find an avenue to reach the surface, it is highly explosive.

In sum, because of the potential to contamination USDWs and a concern for the integrity of the well case and its cement, we request that there be a public hearing to fully Discuss these important issues.

Very Truly Yours,



David A. Bower

DB/TS

D



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
WU-16J

MAY 10 2005

CERTIFIED MAIL 7001 0320 0006 1560 5309
RETURN RECEIPT REQUESTED

Mr. William C. Fulkerson
Warner Norcross & Judd LLP
Attorneys at Law
900 Fifth Third Center
111 Lyon Street, N.W.
Grand Rapids, Michigan 49503-2487

**Re: Public Comments On United States Environmental Protection Agency (USEPA)
Underground Injection Control (UIC) Draft Permit #MI-163-3G-A002**

Dear Mr. Fulkerson:

Thank you for your comment letter on the above-referenced draft permit. We appreciate you taking the time to express your client's concerns regarding the injection for the solution mining of salt to enlarge existing salt caverns for hydrocarbon storage at the Sunoco Inkster Facility by Sunoco Partners Marketing & Terminals L.P. (SPMT) of Taylor, Michigan.

In the second paragraph of your letter you expressed concerns about the injection interval to be involved in the proposed cavern expansion. At this present time SPMT only intends to expand the four caverns/wells (Nos. 4, 5, 7 and 9), as specified in Part III, page D-1 of the permit, completed in the "B" unit or Salt of the Salina Group from approximately 1510 - 1730 feet. The upper interval or "F" unit from 1175 - 1280 feet was included to cover the other four existing gas storage caverns/wells (Nos. 1, 2, 3 and 6), since SPMT indicated they might expand those caverns also sometime in the near future.

In the third and fourth paragraphs of your letter you expressed concerns about well/cavern integrity issues causing gas migration into the underground source of drinking water (USDW) or to the surface where it could possibly ignite or explode. According to the SPMT permit application, the salt caverns are non-pressurized, solution-mined voids in the natural salt stratum. Liquefied petroleum gases (LPG) are added or removed from the caverns by means of brine displacement. Brine fills the bottom of the cavern; LPG product fills the upper area of the cavern. Because the specific gravity of the brine is approximately twice that of the LPG, the weight of the brine tube contains the LPG in the cavern. The brine tube or tubing is set at least 100 feet below the long string casing in all the subject wells. The caverns are normally considered empty when there is 2000 barrels of LPG remaining in the cavern. The risk of introducing brine into the pipeline or exposing the long string casing to lengthy exposure, resulting in contamination or corrosion problems, is possible if inventories are taken below the 2000 barrel level. Any movement in or out of the caverns, above or below, these limits requires

management approval and a "cavern watch" (physical presence at the wellhead to monitor pressure gauges).

The wells have surface casing set below the USDW and are cemented to surface; the longstring casings are set at 1499 - 1570 feet and are also cemented to the surface. The USEPA will require that each well be tested for Part I and Part II of mechanical integrity (MI) prior to issuing the authorization to inject for each well. Part I involves the pressure testing of the casing and tubing by a standard annular pressure test or by the water-brine interface test. Part II of the MI test (MIT) for integrity of the longstring cement could be done by an oxygen activation log, temperature log, or by a noise log. Parts I and II of the MIT are required initially and every five years thereafter. Also SPMT indicates that the caverns and mechanical appurtenances are on a 10-year inspection cycle. Included in the inspection would be to sonar the caverns, inspection of the casing and tubing, and repair, replace, or update wellhead equipment. During freshwater injection or cavern expansion, sonar on each cavern will be done at shorter intervals to accurately determine cavern expansion rates. Each cavern wellhead has an emergency shut down valve that is set up to close the associated piping should any abnormal conditions occur in the cavern or associated piping. In addition, there are sensors or detectors on the brine lines that sense the presence of any LPG in the atmosphere. They alarm the facility activating the appropriate response including but not limited to shutdown. In addition, there are perimeter vapor detectors that act as secondary detectors through-out the facility.

The Sunoco Inkster facility has emergency procedures and response including the following. All operators are Level II, first responders under the hazardous waste operations and emergency response regulations. Interactive training involving employees covers recognition of a release, alert operations, area evacuation, spill containment or control, selection of personal protective equipment, and decontamination. Also there are routine walk throughs from local emergency response crews including the cities of Taylor and Romulus.

SPMT is responsible for ensuring the groundwater is protected from contamination due to injection activities. The USEPA, under the Safe Drinking Water Act, and the Michigan Department of Environmental Quality (MDEQ), under Section 307, can require owners/operators to clean-up any contamination due to injection activities, and/or supply alternative water supplies to affected parties. The USEPA only has authority over the injection activity. A USEPA permit for an injection well gives permission to inject fresh water based on USEPA's finding that injection will be done in an environmentally safe manner. By copy of this letter, we are forwarding your comments on this matter to the MDEQ's Lansing District Office. If you should have any questions regarding the surface facilities, such as the location of the proposed injection well or leak containment, you should contact:

Mr. Ray Vugrinovich
MDEQ Minerals & Mapping Unit
525 West Allegan
Lansing, Michigan 48933
(517) 241-1532

One of your concerns was about the large volume of fresh water used to solution mine the caverns. The Great Lakes Charter Annex and the Great Lakes Charter of 1985 are outside

USEPA purview and questions in this regard should be referred to the Council of Great Lakes Governors, 35 East Wacker Drive, Suite 1850, Chicago, Illinois 60601, telephone: (312) 407-0177 or fax: (312) 407-0038. According to SPMT representatives, fresh water wells may be drilled to augment the supply of fresh water needed. If you have any questions regarding the specifics of the proposed wells, such as additional fresh water wells drilled, you should contact Mr. Jonathan O. Ojany, Regional Engineer, Sunoco Pipeline L.P., at (313) 292-9822.

Since the proposed injection operations at the Sunoco Inkster facility meet all Federal UIC requirements for environmental protection, the USEPA intends to issue a final permit for this area permit.

In accordance with Title 40 of the Code of Federal Regulations (40 CFR) §124.19, any person who filed comments on the draft permit or participated in the public hearing may petition the Environmental Appeals Board to review any condition of the final permit decision. Such a petition must include a statement of the reasons supporting review of the decision, including a demonstration that the issue(s) being raised for review were raised during the public comment period to the extent required by these regulations. The petition should, when appropriate, show that the permit condition(s) being appealed are based upon either, (1) a finding of fact or conclusion of law which is clearly erroneous, or (2) an exercise of discretion or an important policy consideration which the Environmental Appeals Board should, in its discretion, review. If you wish to request an administrative review, you must submit such a request by regular mail to the United States Environmental Protection Agency, Environmental Clerk of the Board, Environmental Appeals Board (MC 1103B), Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20460-0001. Requests sent by express mail, UPS, or hand-delivered must be sent to the United States Environmental Protection Agency, Clerk of the Board Environmental Appeals Board, Colorado Building, 1341 G Street, N.W., Suite 600, Washington D.C. 20005. The request must arrive at the Board's office within 30 days of the receipt of the notice of decision. We are taking the opportunity in this letter to serve notice to you that we are proceeding with the issuance of the permit referenced above. The request will be timely if received within this time period. For this request to be valid, it must conform to the requirements of 40 CFR §124.19. A copy of these requirements is attached. This request for review must be made prior to seeking judicial review of any permit decision.

If you have any further questions or concerns, please feel free to contact Roger Hall of my staff at (312) 353-5228.

Sincerely yours,

Lisa Perenchio, Chief
Direct Implementation Section

Enclosure

cc: Ray Vugrinovich, MDEQ
Jonathan O. Ojany, Sunoco Pipeline L.P.

RGK
5/10/05

JAA
5/10/05
ER for HP
5/10/05

E



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
WU-16J

MAY 12 2005

CERTIFIED MAIL 7001 0320 0006 1560 5316
RETURN RECEIPT REQUESTED

Mr. David A. Bower
Attorney at Law
10600 West Jefferson Avenue
River Rouge, Michigan 48218

**Re: Public Comments On United States Environmental Protection Agency (USEPA)
Underground Injection Control (UIC) Draft Permit #MI-163-3G-A002**

Dear Mr. Bower:

Thank you for your comment letter on the above-referenced draft permit. We appreciate you taking the time to express your client's concerns regarding the injection for the solution mining of salt to enlarge existing salt caverns for hydrocarbon storage at the Sunoco Inkster Facility by Sunoco Partners Marketing and Terminals L.P. (SPMT) of Taylor, Michigan.

In your letter you expressed concerns about well/cavern integrity issues causing gas migration into the underground source of drinking water (USDW) or to the surface where it could possibly ignite or explode. According to the SPMT permit application, the salt caverns are non-pressurized, solution-mined voids in the natural salt stratum. Liquefied petroleum gases (LPGs) are added or removed from the caverns by means of brine displacement. Brine fills the bottom of the cavern via the brine tube or tubing; LPG product fills the upper area of the cavern. Because the specific gravity of the brine is approximately twice that of the LPGs, the weight of the brine contains the LPGs in the upper portion of the cavern. To add LPG product into a cavern, pumping increases the pressure in the product line. As product pressure becomes greater than the pressure produced by the weight of the brine at the bottom of the brine tube, the brine level in the cavern is pushed lower and brine is pushed up the brine tube and into the brine flare tank located on the ground surface. Conversely, when product is removed from a cavern, the resulting drop in product pressure allows the heavier brine to flow down into the cavern from the surface brine ponds. The maximum receiving pressure for the product line is 750 psi to protect the integrity of the cavern casing shoe. The brine tube or tubing is set at least 100 feet below the long string casing in all the subject wells and the cavern(s) are not allowed to have less than 2000 barrels of LPG remaining in them. The risk of introducing brine into the gas pipeline or exposing the long string casing to lengthy brine exposure, resulting in contamination or corrosion problems, is possible if inventories are taken below the 2000 barrel level. When fluids are moved in or out of

the caverns a "cavern watch" (physical presence at the wellhead to monitor pressure gauges is maintained).

The injection wells have surface casing set below the USDW and cemented to surface; the longstring casings are set at 1499 - 1570 feet and are also cemented to the surface. The USEPA would require that each well be tested for Part I and Part II of mechanical integrity testing (MIT) prior to issuing the authorization to inject for each well. Part I involves the pressure testing of the casing and tubing by a standard annular pressure test or by the water-brine interface test. Part II of the MIT for integrity of the longstring cement could be done by an oxygen activation log, temperature log or noise log. Parts I and II of the MIT are required initially and every five years thereafter. Also, SPMT indicates that the caverns and mechanical appurtenances are on a 10-year inspection cycle. Included in the inspection would be to sonar the caverns, inspect the casing and tubing and repair, replace and update wellhead equipment. During freshwater injection or cavern expansion, sonar on each cavern will be done at shorter intervals to accurately determine cavern expansion rates. Each cavern wellhead has an emergency shut down valve that is set up to close the associated piping should any abnormal conditions occur in the cavern or associated piping. In addition, there are sensors or detectors on the brine lines that sense the presence of any LPGs in the atmosphere. They alarm the facility activating the appropriate response including but not limited to shutdown. In addition, there are perimeter vapor detectors that act as secondary detectors through out the facility.

The Sunoco Inkster facility has emergency procedures and responses. All operators are Level II, first responders under the hazardous waste operations and emergency response regulations. Interactive training for employees covers recognition of a release, alert operations, area evacuation, spill containment or control, selection of personal protective equipment, and decontamination. Also routine walk-through exercises are conducted by local emergency response crews from the cities of Taylor and Romulus.

SPMT is responsible for ensuring the groundwater is protected from contamination due to injection activities. The USEPA, under the Safe Drinking Water Act, and the Michigan Department of Environmental Quality (MDEQ), under Section 307, can require owners/operators to clean-up any contamination due to injection activities, and/or supply alternative water supplies to affected parties. The USEPA only has authority over the injection activity. A USEPA permit for an injection well gives permission to inject fresh water based on USEPA's finding that injection will be done in an environmentally safe manner. By copy of this letter, we are forwarding your comments on this matter to the MDEQ's Lansing District Office. If you should have any questions regarding the surface facilities, such as the location of the proposed injection well or leak containment, you should contact:

Mr. Ray Vugrinovich
MDEQ Minerals & Mapping Unit
525 West Allegan
4th Floor North Tower
Lansing, Michigan 48933
(517) 241-1532

Since the proposed injection operations at the Sunoco Inkster facility meet all Federal UIC requirements for environmental protection, the USEPA intends to issue a final permit for this facility.

In accordance with Title 40 of the Code of Federal Regulations (40 CFR) §124.19, any person who filed comments on the draft permit or participated in the public hearing may petition the Environmental Appeals Board to review any condition of the final permit decision. Such a petition must include a statement of the reasons supporting review of the decision, including a demonstration that the issue(s) being raised for review were raised during the public comment period to the extent required by these regulations. The petition should, when appropriate, show that the permit condition(s) being appealed are based upon either, (1) a finding of fact or conclusion of law which is clearly erroneous, or (2) an exercise of discretion or an important policy consideration which the Environmental Appeals Board should, in its discretion, review. If you wish to request an administrative review, you must submit such a request by regular mail to the United States Environmental Protection Agency, Environmental Clerk of the Board, Environmental Appeals Board (MC 1103B), Ariel Rios Building, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20460-0001. Requests sent by express mail, UPS, or hand-delivered must be sent to the United States Environmental Protection Agency, Clerk of the Board Environmental Appeals Board, Colorado Building, 1341 G Street, N.W., Suite 600, Washington D.C. 20005. The request must arrive at the Board's office within 30 days of the receipt of the notice of decision. We are taking the opportunity in this letter to serve notice to you that we are proceeding with the issuance of the permit for the well referenced above. The request will be timely if received within this time period. For this request to be valid, it must conform to the requirements of 40 CFR §124.19. A copy of these requirements is attached. This request for review must be made prior to seeking judicial review of any permit decision.

If you have any further questions or concerns, please feel free to contact Roger Hall of my staff at (312) 353-5228.

Sincerely yours,

Lisa Perenchio, Chief
Direct Implementation Section

Enclosure

cc: Ray Vugrinovich, MDEQ
Jonathan O. Ojany, Sunoco Pipeline L.P.

Gi/WC/Resp To Comments / MI-163-BG-A002 control H 31, wjpd

*RGA
5/12/05*

AP5/12/05

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Page 1 of 14

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)
UNDERGROUND INJECTION CONTROL CLASS III PERMIT

Permit Number: MI-163-3G-A002

Facility Name: Sunoco Inkster Facility

Pursuant to the provisions of the Safe Drinking Water Act, as amended (42 U.S.C. 300f et seq., commonly known as the SDWA) and implementing regulations promulgated by the United States Environmental Protection Agency (USEPA) at Parts 124, 144, 146 and 147 of Title 40 of the Code of Federal Regulations (40 CFR), Sunoco Partners Marketing & Terminals L.P. of Taylor, Michigan is authorized to operate four existing wells located in a permit area limited to the W/2 of NE/4 & SW/4 & NW/4 of the NW/4 of the NW/4 of Section 7, Township 3 South, Range 10 East and the NE/4 & SE/4 of the NE/4 of the NE/4 of Section 12, Township 3 South, Range 9 East in Wayne County, Michigan. Injection shall be limited to the F, E, D, C and B units of the Salina Group between 1150 and 1800 feet, upon the express condition that the permittee meet the restrictions set forth herein. The names and locations of wells authorized under this permit and a map of the permit area are provided in Part III(D) of this permit. Additional injection wells may be constructed and operated within the permit area provided that the permittee notifies the Director prior to construction and all permit requirements are met. Injection shall not commence into any newly drilled or converted well until the operator has received authorization in accordance with Part I(E)(10) of this permit.

The purpose of the injection is limited to solution mining of salt to enlarge existing salt caverns for hydrocarbon storage.

All references to 40 CFR are to all regulations that are in effect on the date that this permit is effective.

This permit shall become effective on JUL 6 2005 and shall remain in full force and effect during the operating life of the field, unless this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR 144.39, 144.40 and 144.41. This permit shall also remain in effect upon delegation of primary enforcement responsibility to the State of Michigan unless that State chooses to adopt this permit as a State permit. This permit will be reviewed at least every five (5) years from the effective date specified above.

Signed and dated: June 6, 2005

Charles J. E. My
for
Jo Lynn Traub
Director, Water Division

PART I
GENERAL PERMIT COMPLIANCE

A. EFFECT OF PERMIT

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. The underground injection activity, otherwise authorized by this permit or rule, shall not allow the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any Primary Drinking Water Regulation found in 40 CFR Part 142 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit or otherwise authorized by permit or rule is prohibited. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under Section 1431 of the Safe Drinking Water Act (SDWA) or any other law governing protection of public health or the environment.

B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR 144.39, 144.40, and 144.41. The filing of a request for a permit modification, revocation and reissuance, termination, or the notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and Section 144.5, any information submitted to the USEPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, USEPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public Information). Claims of confidentiality for the following information will be denied:

- (1) The name and address of the permittee; and
- (2) Information which deals with the existence, absence or level of contaminants in drinking water.

E. DUTIES AND REQUIREMENTS

1. **Duty to Comply** - The permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit pursuant to 40 CFR 144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance or modification.
2. **Penalties for Violations of Permit Conditions** - Any person who operates this well in violation of permit conditions is subject to civil penalties, fines, and other enforcement action under the SDWA and may be subject to such actions under the Resource Conservation and Recovery Act. Any person who willfully violates a permit condition may be subject to criminal prosecution.
3. **Need to Halt or Reduce Activity not a Defense** - It shall not be a defense for a permittee in an enforcement action to state that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate** - The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
5. **Proper Operation and Maintenance** - The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.
6. **Duty to Provide Information** - The permittee shall furnish to the Director, within thirty (30) days, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required by this permit to be retained.

7. Inspection and Entry - The permittee shall allow the Director or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:
- (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;
 - (b) Have access to and copy at reasonable times any records that must be retained under the conditions of this permit;
 - (c) Inspect at reasonable times any facilities, equipment (including monitoring equipment), practices, or operations regulated or required under this permit; and
 - (d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any facilities, equipment or operations regulated or required under this permit.

8. Records

- (a) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, and copies of all records required by this permit for a period of at least three (3) years from the date of the sample, measurement or report. The permittee shall also maintain records of all data required to complete this permit application and any supplemental information submitted under 40 CFR 144.31 and 144.51. These periods may be extended by request of the Director at any time by written notice to the permittee.
- (b) The permittee shall retain records concerning the nature and composition of all injected fluids until three (3) years after the completion of plugging and abandonment in accordance with the plugging and abandonment plan, contained in Part III(B) of this permit. The owner or operator shall continue to retain the records after the three (3) year retention period unless he delivers the records to the Regional Administrator or obtains written approval from the Regional Administrator to discard the records.
- (c) Records of monitoring information shall include:
 - (i) The date, exact place, and the time of sampling or measurements;

- (ii) The name(s) of the individual(s) who performed the sampling or measurements;
- (iii) A precise description of both sampling methodology and the handling of samples;
- (iv) The date(s) analyses were performed;
- (v) The name(s) of the individual(s) who performed the analyses;
- (vi) The analytical techniques or methods used; and
- (vii) The results of such analyses.

9. Notification Requirements

- (a) Planned Changes - The permittee shall notify and obtain the Director's approval at least thirty (30) days prior to any planned physical alterations or additions to the permitted facility or changes in the injection fluids. Within ten (10) days prior to injection, an analysis of new injection fluids shall be submitted to the Director in accordance with Parts II(B) (2) and II(B) (3) of this permit.
- (b) Anticipated Noncompliance - The permittee shall give at least thirty (30) days advance notice to the Director for his/her approval of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- (c) Transfer of Permits - This permit is not transferrable to any person except after notice is sent to the Director at least thirty (30) days prior to transfer and the requirements of 40 CFR §144.38 have been met. The Director may require modification or revocation of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the SDWA.
- (d) Compliance Schedules - Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted to the Director no later than thirty (30) days following each schedule date.
- (e) Twenty-Four (24) Hour Reporting
 - (i) The permittee shall report to the Director any noncompliance which may endanger health or the

environment. This information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances and shall include the following information:

- (a) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or
 - (b) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.
- (ii) A written submission shall also be provided as soon as possible but no later than five (5) days from the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
- (f) Other Noncompliance - All other instances of noncompliance shall also be reported by the permittee in accordance with Part I(E) (9) (e) (i) and (ii) of this permit.
- (g) Other Information - If or when the permittee becomes aware that the permittee failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall promptly submit such facts or corrected information in accordance with 40 CFR 144.51 (1) (8) .
- (h) Report on Permit Review - Within thirty (30) days of receipt of the final issued permit, the permittee shall report to the Director that the permittee has read and is personally familiar with all terms and conditions of this permit.
10. Commencing Injection - The permittee shall not commence injection into any newly drilled or converted well until:
- (a) Formation data and injection fluid analysis have been submitted in accordance with Part II(A) (5) and II(B) (2) (c), respectively;

- (b) A report on any logs and tests required under Part II(A) (4) of this permit has been submitted;
 - (c) Mechanical integrity of the well has been demonstrated in accordance with Part I(E) (18);
 - (d) Any required corrective action has been performed in accordance with Parts I(E) (17) and III(C); and
 - (e) Construction is complete and the permittee has submitted to the Director, by certified mail with return receipt requested, a notice of completion of construction using EPA Form 7520-10, a plugging and abandonment plan, a copy of the State permit and either:
 - (i) The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or
 - (ii) The permittee has not received, within thirteen (13) days of the date of the Director's receipt of the report required above, notice from the Director of his or her intent to inspect or otherwise review the new injection well, in which case prior inspection or review is waived and the permittee may commence injection.
11. Signatory Requirements - All reports or other information requested by the Director shall be signed and certified according to 40 CFR 144.32.
12. Notice of Plugging and Abandonment - The permittee shall notify the Director at least forty-five (45) working days before conversion or abandonment of the injection well.
13. Plugging and Abandonment - The permittee shall plug and abandon the well as provided in the plugging and abandonment plan contained in Part III(B) of this permit. Within sixty (60) working days after plugging a well, or at the time of the next quarterly report (whichever is later), the permittee shall submit a report to the Director. The report shall be certified as accurate by the person who performed the plugging operation and shall consist of either:
- (a) A statement that the well was plugged in accordance with the plan previously submitted to the Director; or
 - (b) If the actual plugging differed from the approved plan, a statement defining the actual plugging and explaining why the Director should approve such deviation. Any deviation from a previously approved plan which may endanger underground sources of drinking water is cause for the Director to require the operator

to replug the well.

14. **Inactive Wells** - After cessation of injection for two (2) years the permittee shall plug and abandon a well in accordance with the plan and 40 CFR 144.52 (a) (6) unless the permittee has:
 - (a) Provided notice to the Director; and
 - (b) Described actions or procedures, which are deemed satisfactory by the Director, that the permittee will take to ensure that the well will not endanger underground sources of drinking water during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived, in writing, by the Director.

15. **Financial Responsibility** - The permittee shall maintain financial responsibility and resources to plug and abandon the underground injection well in accordance with 40 CFR 144.52(a) (7) as provided in Attachment R of the administrative record corresponding to this permit action which is hereby incorporated by reference as if it appeared fully set forth herein. The permittee shall not substitute an alternative demonstration of financial responsibility from that which the Director has approved unless the permittee has previously submitted evidence of that alternative demonstration to the Director and the Director has notified the permittee in writing that the alternative demonstration of financial responsibility is acceptable. The financial responsibility mechanism shall be updated periodically, upon request of the Director, except when Financial Statement Coverage is used as the financial mechanism; this coverage must be updated on an annual basis.

16. **Insolvency**
 - (a) In the event of the bankruptcy of the trustee or issuing institution of the financial mechanism, or a suspension or revocation of the authority of the trustee institution to act as trustee or the institution issuing the financial mechanism to issue such an instrument, the permittee must submit an alternative demonstration of financial responsibility acceptable to the Director within sixty (60) days after such event. Failure to do so will result in the termination of this permit pursuant to 40 CFR 144.40(a) (1).
 - (b) An owner or operator must also notify the Director by certified mail of the commencement of voluntary or involuntary proceedings under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within ten (10) business days after the commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification if he or she is named as debtor, as required under the terms of the guarantee.

17. Corrective Action

The permittee shall shut-in the injection well whenever the permittee or USEPA determines that operation thereof may be causing upward fluid migration through the well bore of any improperly plugged or unplugged well in the area of review and shall take such steps as the permittee can to properly plug the offending well(s). Any operation of the well which may cause upward fluid migration from an improperly plugged or unplugged well will be considered a violation of this permit. If the permittee or USEPA determines that the permitted well is not in compliance with 40 CFR 146.8, the permittee will immediately shut-in the well until such time as appropriate repairs can be effected and written approval to resume injection is given by the Director. In addition, the permittee shall not commence injection until any and all corrective action has been taken in accordance with any plan contained in Part III(C) of this permit and the requirements in Part I(E) (10) of this permit have been met.

18. Mechanical Integrity (MI) - The permittee must establish and shall maintain mechanical integrity of this well in accordance with 40 CFR 146.8. The mechanical integrity demonstration consists of two parts: Part I demonstrates no significant leaks in the casing, tubing, or packer and Part II demonstrates no significant fluid movement into an underground source of drinking water (USDW) through vertical channels adjacent to the wellbore. The permittee is required to pass both parts of the mechanical integrity demonstration in accordance with Part I(E) (18) (a) and (b) of this permit and thereafter once every sixty (60) months from the date of the last approved demonstration.

- (a) Pursuant to 40 CFR 146.8(a) (1), prior to commencing injection into any newly drilled well, the permittee shall demonstrate the first part of MI by using the standard annulus pressure test or another approved method.
- (b) Pursuant to 40 CFR 146.8(a) (2), prior to commencing injection, the permittee shall demonstrate the second part of MI by running a noise, temperature or oxygen activation log. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. However, should the nature of the casing preclude the use of a noise, temperature or oxygen activation log, then pursuant to 40 CFR 146.8(c) (3), cementing records may be used to demonstrate the presence of adequate cement to prevent fluid migration behind the outermost casing and the wellbore.
- (c) The permittee shall cause all gauges used in mechanical integrity demonstrations to be calibrated to an accuracy of not less than one-half percent (0.5%) of full scale. A copy of the calibration certificate shall be submitted to the Director or his/her representative at the time of

demonstration.

- (d) The permittee shall cease injection in a well if a loss of mechanical integrity occurs or is discovered during a test, or a loss of mechanical integrity as defined by 40 CFR 146.8 becomes evident during operation. Operation of the well shall not resume until the Director gives approval to recommence.
 - (e) The permittee shall notify the Director of the loss of mechanical integrity in accordance with the reporting procedures in Part I (E) (9) (e) and II (B) (3) (b) of this permit.
 - (f) The permittee shall report the results of a satisfactory mechanical integrity demonstration as provided in Part II (B) (3) (b) of this permit.
19. Restriction on Injected Substances - The permittee shall be restricted to the injection of fresh water from the Municipality or from water wells on-site. No fluids other than those from sources noted in the administrative record and approved by the Director shall be injected. Each year, the permittee shall submit, a certified statement attesting to compliance with this requirement.
20. Construction, conversion, operation and plugging & abandonment within the permit area - The permittee may construct, operate, convert, or plug and abandon wells within the permit area, provided that all permit conditions are met and :
- (a) The permittee notifies the Director at such times as specified in the permit, and,
 - (b) Any additional wells are:
 - (i) Described and identified by location;
 - (ii) Located within the same well field, facility site, reservoir project, or similar unit in the same State, and injecting in the same formation; and,
 - (iii) Operated by the permittee.

PART II

WELL SPECIFIC CONDITIONS FOR UNDERGROUND INJECTION CONTROL PERMITS

A. CONSTRUCTION REQUIREMENTS

1. Siting - Notwithstanding any other provision of this permit, the injection well shall inject only into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of the review.
2. Casing and Cementing - Injection wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of the well shall be as contained in Attachments L and M of the administrative record corresponding to this permit action which are hereby incorporated by reference as if they appeared fully set forth herein.
3. Wellhead Specifications - A female coupling and valve shall be installed at the wellhead to be used for independent injection pressure readings.
4. Logs and Tests - Upon approval of the surface casing and cementation records by the Director, any logs and tests noted in Part III of this permit shall be performed, unless already provided. Prior to commencement of injection, the permittee shall submit to the Director for approval a descriptive report prepared by a knowledgeable log analyst interpreting the results of those logs and tests, along with the notice of completion required in Part I(E) (10) of this permit.
5. Formation Data - If not already provided, the permittee shall determine or calculate the following information concerning the injection formation and submit it to the Director for review and approval, prior to operation:
 - (a) Formation fluid pressure;
 - (b) Fracture pressure; and,
 - (c) Physical and chemical characteristics of the formation fluids
6. Prohibition of Unauthorized Injection - Any underground injection, except as authorized by permit or rule issued under the UIC program, is prohibited. The construction, including drilling, of any well required to have a permit is prohibited until a permit has been issued and is effective.

B. OPERATING, MONITORING AND REPORTING REQUIREMENTS**1. Operating Requirements**

Beginning on the effective date of this permit, the permittee is authorized to operate the injection well, subject to the limitations and monitoring requirements set forth herein. Except during stimulation, injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water. The injection pressure and injected fluid shall be limited and monitored as specified in Parts I(E) (19) and III(A) of this permit.

2. Monitoring Requirements

- (a) Samples and measurements taken for the purpose of monitoring as required in Part II(B) (3) shall be representative of the monitored activity. Grab samples shall be used to obtain a representative sample of the fluid to be analyzed. Part III(A) of this permit describes the sampling location and required parameters for injection fluid analysis. The permittee shall identify the types of tests and methods used to generate the monitoring data. The monitoring program shall conform to the one described in Part III(A) of this permit.
- (b) **Analytical Methods** - Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR Section 136.3 or in Appendix III of 40 CFR Part 261 or by other methods that have been approved by the Director.
- (c) **Injection Fluid Analysis** - The nature of the injection fluids shall be monitored as specified in Part III(A) of this permit. An initial analysis of the injection fluid is contained in Attachment H of the administrative record corresponding to this permit action which is hereby incorporated by reference as if it appeared fully set forth herein. Whenever the injection fluid is modified to the extent that the analysis required by 40 CFR 146.34(a) (7) (iii) is incorrect or incomplete a new analysis shall be provided to the Director at the time of the next quarterly report. The Director may, by written notice, require the permittee to sample and analyze the injection fluid at any time.
- (d) **Injection Pressure and Cumulative Volume** - The injection pressure shall be monitored semi-monthly and shall be reported quarterly as

specified in Part III(A) of this permit. The injected and produced fluid volumes shall be monitored daily and shall be reported quarterly. All gauges used in monitoring shall be calibrated according to Part I E(18) (c) of this permit.

3. Reporting Requirements - Copies of the monitoring results and all other reports shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590
Attn: UIC Branch, Direct Implementation Section (WU-16J)

- (a) Quarterly Reports - The permittee shall submit the results of the injection fluid analyses specified in permit conditions in Part (II) (B) (2) (c) and in Attachment A no later than the 10th day of the month following the end of the reporting period. Monitoring results shall be recorded on a form which has been signed and certified according to 40 CFR 144.32. Forms shall be submitted at the end of each quarter and shall be postmarked no later than the 10th day of the month following the reporting period. The first report shall be sent no later than the 10th day of the month following the quarter in which injection commences. This report shall include monthly average, maximum and minimum values for injection pressure, injected and produced volumes and the specific gravity of the injected fluids.
- b) Reports on Well Tests, Workovers, and Plugging and Abandonment - The applicant shall provide the Director with the following reports and test results within sixty (60) days of completion of the activity:
- (i) Mechanical integrity tests, except tests which the well fails, in which case twenty-four (24) hour reporting under Part I(9) (e) is applicable;
 - (ii) Logging or other test data;
 - (iii) Well workovers (using EPA Form 7520-12); and
 - (iv) Plugging and abandonment.

PART III
SPECIAL CONDITIONS

These special conditions include, but are not limited to, plans for maintaining correct operating procedures, monitoring conditions and reporting, as required by 40 CFR Parts 144 and 146. These plans are described in detail in the permittee's application for a permit, and the permittee is required to adhere to these plans as approved by the Director, as follows:

- A. OPERATING, MONITORING AND REPORTING REQUIREMENTS (ATTACHED)
- B. PLUGGING AND ABANDONMENT PLAN (ATTACHED)
- C. CORRECTIVE ACTION PLAN (ATTACHED)
- D. ADDITIONAL REQUIREMENTS (IF REQUIRED)

OPERATING, MONITORING AND REPORTING REQUIREMENTS

<u>Characteristic</u>	<u>LIMITATION</u>	<u>MINIMUM MONITORING REQUIREMENTS</u>	<u>MINIMUM REPORTING REQUIREMENTS</u>
*Injection Pressure 382 psig (MAXIMUM)		semi-monthly	quarterly
Cumulative Injected Volume		daily	quarterly
Cumulative Produced Volume		daily	quarterly
Specific Gravity		monthly grab	quarterly
**Chemical Composition of Injected Fluid		quarterly grab	quarterly

SAMPLING LOCATION: wellhead

*The limitation on wellhead pressure serves to prevent injection formation fracturing. The maximum wellhead pressure is dependent upon injection formation fracture gradient, depth and specific gravity of the injected fluid. This limitation was calculated using the following formula:

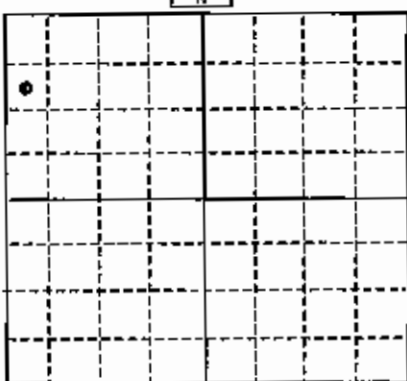
$$[(0.8 \text{ psi/ft} - 0.433 \text{ psi/ft}) (\text{specific gravity}) \times \text{depth}] - 14.7 \text{ psi}$$
 The F member of the Salina formation at 1150 feet was used as the depth, a specific gravity of 1.05 was used for the injected fluid and a fracture gradient of 0.8 psi/ft was determined from a default value for Michigan.

**Chemical composition analysis shall include, but not be limited to, the following: Sodium, Calcium, Magnesium, Total Iron, Chloride, Sulfate, Carbonate, Bicarbonate, Sulfide, Total Dissolved Solids, pH, Resistivity (ohm-meters @ 75°F).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

PLUGGING AND ABANDONMENT PLAN

WELL NAME & NUMBER, FIELD NAME, LEASE NAME & NUMBER LPG Storage #4	NAME, ADDRESS, & PHONE NUMBER OF OWNER / OPERATOR Sunoco Partners Marketing and Terminals LLP 7155 Inkster Rd Taylor Michigan 48180 313-292-9822
--	---

Locate Well and Outline Unit on Section Plat - 840 Acres 	STATE <u>Michigan</u> COUNTY <u>Wayne</u> STATE PERMIT NUMBER <u>20404</u>	SURFACE LOCATION DESCRIPTION <u>SW 1/4 of NW 1/4 of NW 1/4 of Section 7 Township 3S Range 10E</u> LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT Surface Location <u>680 ft. From (N/S) North</u> Line of Quarter Section And <u>420 ft. From (E/W) West</u> Line of Quarter Section
TYPE OF AUTHORIZATION <input type="checkbox"/> Individual Permit <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Area Permit		WELL ACTIVITY <input type="checkbox"/> Class I <input type="checkbox"/> Hazardous <input type="checkbox"/> Nonhazardous <input type="checkbox"/> Class II <input type="checkbox"/> Brine Disposal <input checked="" type="checkbox"/> Hydrocarbon Storage <input type="checkbox"/> Enhanced Recovery <input type="checkbox"/> Class III <input type="checkbox"/> Class IV
Number of Wells in Area Permit _____ US EPA Permit Number _____		

CASING/TUBING/CEMENT RECORD AFTER PLUGGING AND ABANDONMENT							METHOD OF EMPLACEMENT OF CEMENT PLUGS			
Size	Wt. (lb) TBS/CSG	Original Amount (CSG)	CSG to be Left in Well	Hole Size	Sacks Cement Used	Type	<input checked="" type="checkbox"/> Balance Method	<input type="checkbox"/> Dump Bailer Method	<input type="checkbox"/> Two Plug Method	<input type="checkbox"/> Other
16"	55865	240	240	20"	235	Class A				
13 3/4"	32.75	1570	1570	13 3/4"	800	Class A				

CEMENT TO PLUG AND ABANDON DATA		Plug #	Plug #	Plug #	Plug #	Plug #	Plug #	Plug #
Size of Hole or Pipe in Which Plug Was Placed (Inches)		10 19"	10 1/8"					
Calculated Top of Plug (ft.)			0					
Measured Top of Plug (ft.)			0					
Depth to Bottom of Plug (ft.)		1565'	1565'					
Sacks of Cement to be Used			770					
Slurry Volume to be Used (cu Ft.)			908					
Slurry Weight (lb./gal.)			15.6					
Type of Cement, Spacer or Other Material Used		Bridge Plug	Class A					
Type of Preflush Used			Fresh					

DESCRIPTION OF PLUGGING PROCEDURE

1. Pull Tubing
2. Set Bridge Plug at 1565'
3. Trip in hole with tubing and spot 770 exs Class A cement in 500' stages from 1565-0'
4. Cut off all casings 3' below grade and weld on 1/2 inch steel plate. Weld MDEQ # on cap
5. Prepare and file MDEQ and EPA Plugging Reports.

ESTIMATED COST OF PLUGGING AND ABANDONMENT

Cement	\$ -	12,240	Cast Iron Bridge Plug	\$ -	2,800
Logging	\$ -	0	Cement Retainer	\$ -	0
Rig or Pulling Unit	\$ -	5,700	Miscellaneous	\$ -	8,512
	\$ -		Total	\$ -	29,352

CERTIFICATION

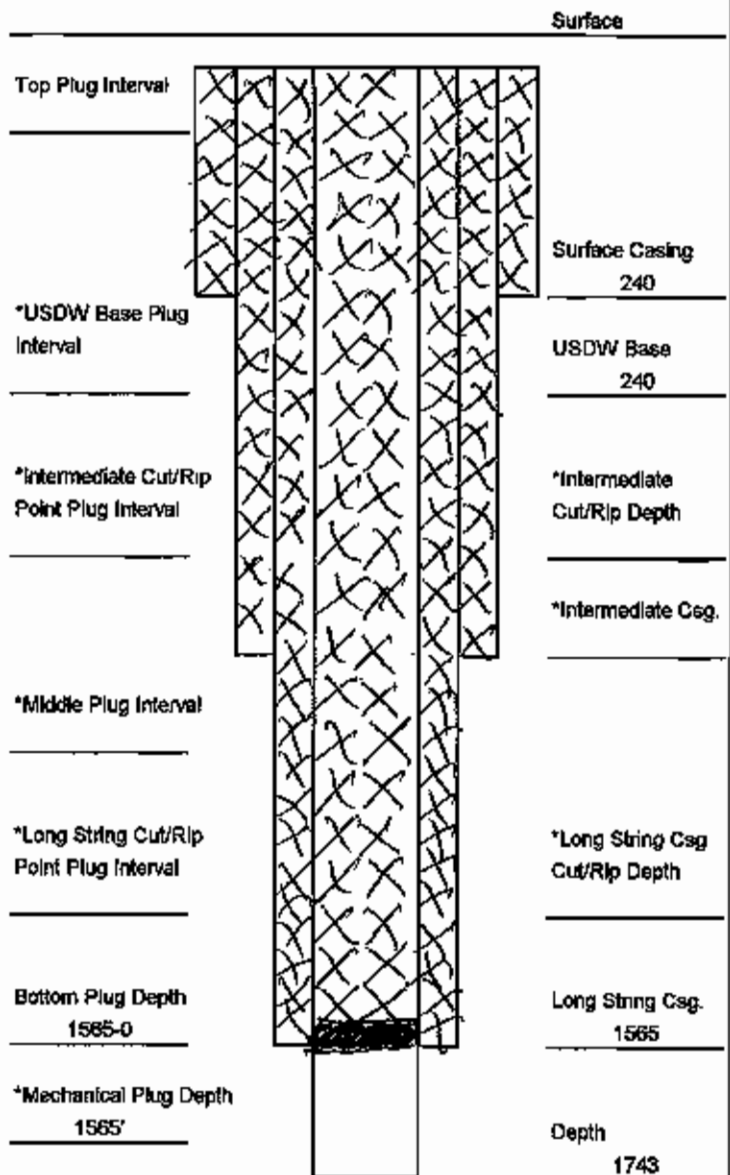
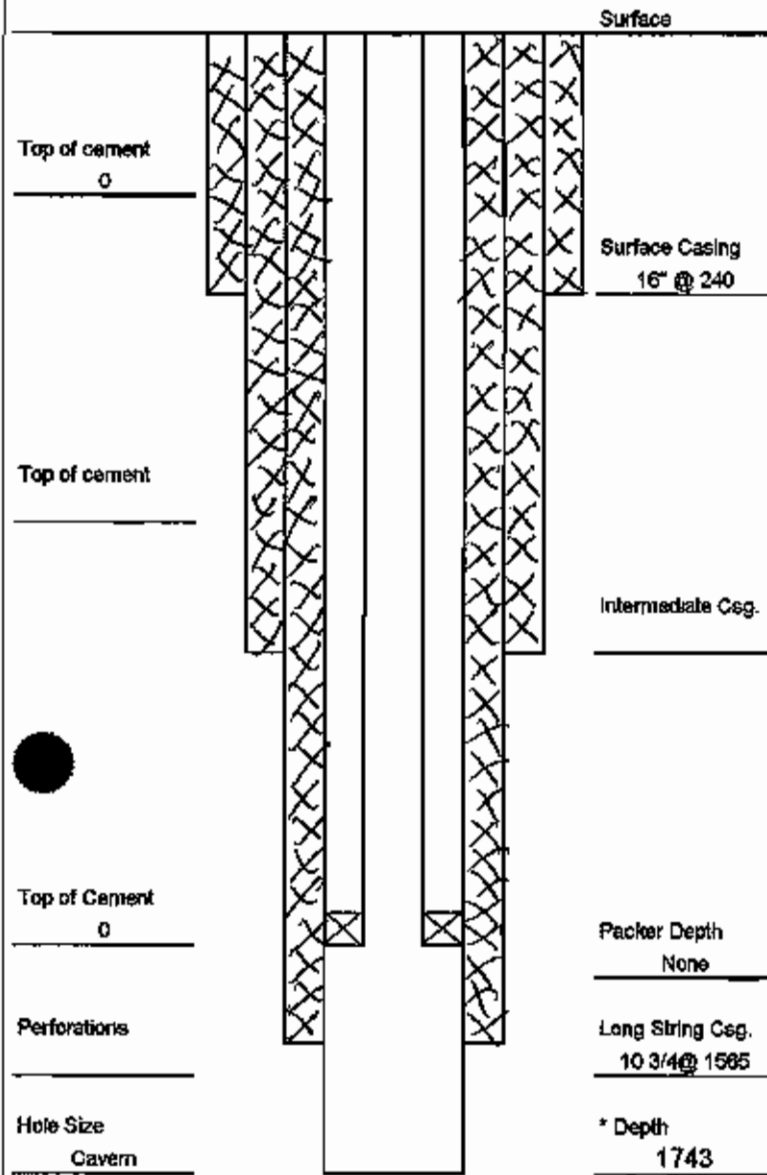
I certify under the penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. to CFR 144.32)

NAME AND OFFICIAL TITLE Dave Justin Vice President	SIGNATURE 	DATE SIGNED 7/27/2004
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ORIGINAL WELL CONSTRUCTION DURING OPERATION

PLUGGING AND ABANDONMENT CONSTRUCTION

LPG #4



** Add Any Additional Information

* May not Apply

** Add Any Additional Information

* May not Apply

LIST OF ALL OPEN AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED

Specify Open Hole/ Perforations/ Varied Casing	From	To	Formation Name
Open Hole	1570	1743	B- Salt

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

PLUGGING AND ABANDONMENT PLAN

WELL NAME & NUMBER, FIELD NAME, LEASE NAME & NUMBER LPG Storage #5	NAME, ADDRESS, & PHONE NUMBER OF OWNER / OPERATOR Sunoco Partners Marketing and Terminals LLP 7155 Inkster Rd Taylor Michigan 48180 313-292-9822
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Locate Well and Outline Unit on Section Plat - 640 Acres <div style="border: 1px solid black; width: 50px; height: 20px; margin: 5px auto; text-align: center;">N</div> 	STATE: Michigan COUNTY: Wayne	STATE PERMIT NUMBER: 21521
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SURFACE LOCATION DESCRIPTION NW 1/4 of NW 1/4 of NW 1/4 of Section 7 Township 3S Range 10E		
LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT Surface Location <u>440 ft.</u> From (N/S) <u>North</u> Line of Quarter Section And <u>575 ft.</u> From (E/W) <u>West</u> Line of Quarter Section		

TYPE OF AUTHORIZATION <input type="checkbox"/> Individual Permit <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Area Permit Number of Wells in Area Permit _____ US EPA Permit Number _____	WELL ACTIVITY <input type="checkbox"/> Class I <input type="checkbox"/> Hazardous <input type="checkbox"/> Nonhazardous <input type="checkbox"/> Class II <input type="checkbox"/> Brine Disposal <input checked="" type="checkbox"/> Hydrocarbon Storage <input type="checkbox"/> Enhanced Recovery <input type="checkbox"/> Class III <input type="checkbox"/> Class IV
--	---

CASING/TUBING/CEMENT RECORD AFTER PLUGGING AND ABANDONMENT							METHOD OF EMPLACEMENT OF CEMENT PLUGS		
Size	WT (LBS) TBS/CSG	Original Amount (CSG)	CSG to be Left in Well	Hole Size	Sacks Cement Used	Type			
16"	55	240	240	20"	600	Class A	<input checked="" type="checkbox"/> Balance Method <input type="checkbox"/> Dump Bailer Method <input type="checkbox"/> Two Plug Method <input type="checkbox"/> Other		
10 3/4"	32.75	1540	1540	13 3/4"	800	Class A			

CEMENT TO PLUG AND ABANDON DATA				Plug #	Plug #	Plug #	Plug #	Plug #	Plug #
Size of Hole or Pipe in Which Plug Will Be Placed (Inches)				10 16"	10 1/6"				
Calculated Top of Plug (ft.)					0				
Measured Top of Plug (ft.)					0				
Depth to Bottom of Plug (ft.)				1530'	1530				
Sacks of Cement to be Used					730				
Slurry Volume to be Used (cu. ft.)					861				
Slurry Weight (lb/gal.)					15.6				
Type of Cement, Spacer or Other Material Used				Bridge Plug	Class A				
Type of Preflush Used					Fresh				

*** DESCRIPTION OF PLUGGING PROCEDURE**

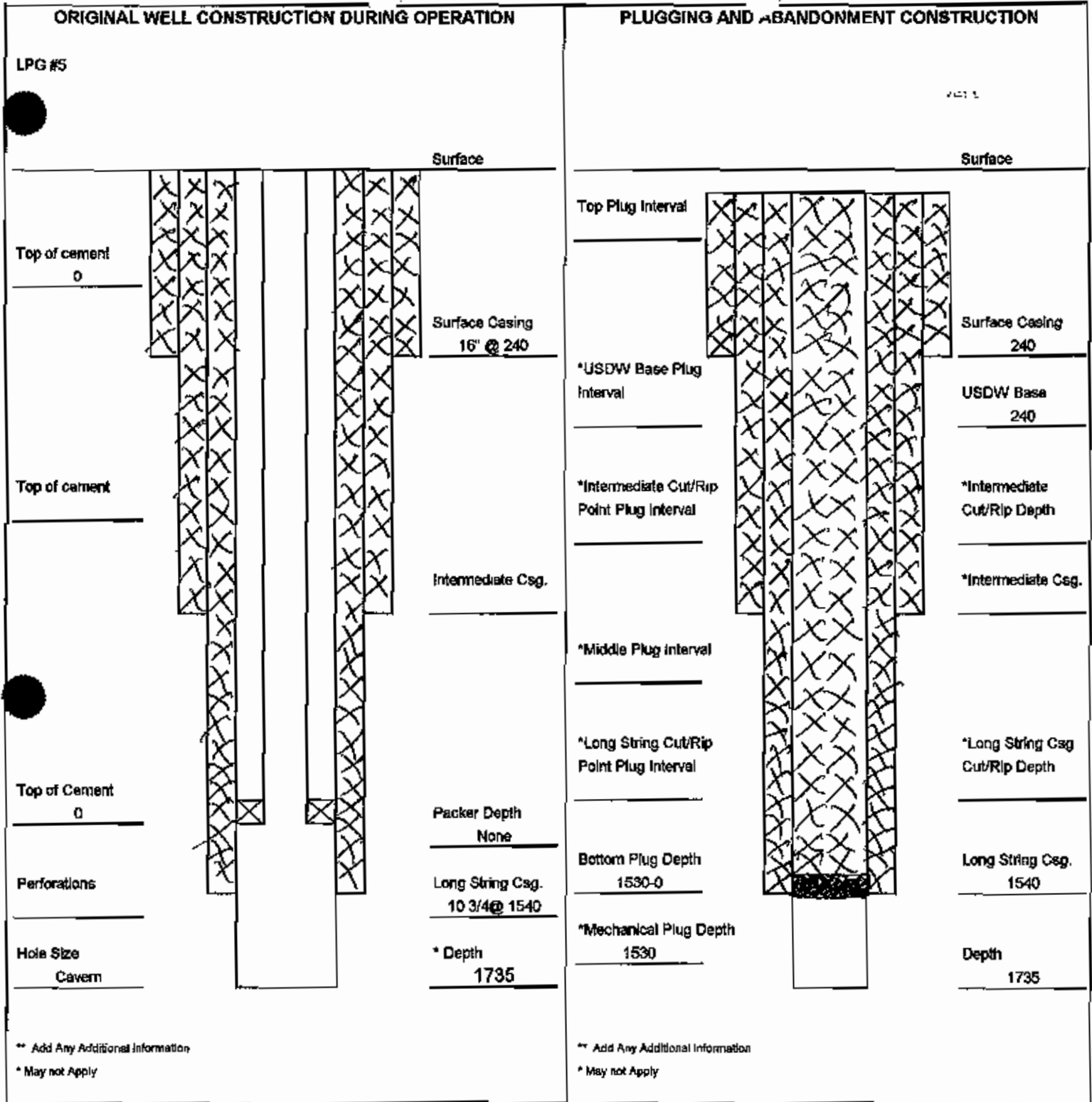
1. Pull Tubing
2. Set Bridge Plug at 1530'
3. Trip in hole with tubing and spot 730 sxs Class A cement in 500' stages from 1530-0'
4. Cut off all casings 3' below grade and weld on 1/2 inch steel plate. Weld MDEQ # on cap
5. Prepare and file MDEQ and EPA Plugging Reports.

ESTIMATED COST OF PLUGGING AND ABANDONMENT					
Cement	\$ -	11,760	Cast Iron Bridge Plug	\$ -	2,800
Logging	\$ -	0	Cement Retainer	\$ -	0
Rig or Pulling Unit	\$ -	5,700	Miscellaneous	\$ -	8,612
	\$ -		Total	\$ -	28,827

CERTIFICATION

I certify under the penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE Dave Justin Vice President	SIGNATURE 	DATE SIGNED 7/27/2004
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LIST OF ALL OPEN AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED

Specify Open Hole/ Perforations/ Varied Casing	From	To	Formation Name
Open Hole	1540	1735	B- Salt

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

PLUGGING AND ABANDONMENT PLAN

WELL NAME & NUMBER, FIELD NAME, LEASE NAME & NUMBER Storage #7	NAME, ADDRESS, & PHONE NUMBER OF OWNER / OPERATOR Sunoco Partners Marketing and Terminals LLP 7155 Inkster Rd Taylor Michigan 48180 313-292-9822
--	---

Locate Well and Outline Unit on Section Plat - 640 Acres 	STATE Michigan	COUNTY Wayne	STATE PERMIT NUMBER 28443
	SURFACE LOCATION DESCRIPTION SE 1/4 of NE 1/4 of NE 1/4 of Section 12 Township 3S Range 9E		
	LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT Surface Location 846 ft. From (N/S) North Line of Quarter Section And 237 ft. From (E/W) East Line of Quarter Section		
TYPE OF AUTHORIZATION <input type="checkbox"/> Individual Permit <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Area Permit Number of Wells in Area Permit _____ US EPA Permit Number _____		WELL ACTIVITY <input type="checkbox"/> Class I <input type="checkbox"/> Hazardous <input type="checkbox"/> Nonhazardous <input type="checkbox"/> Class II <input type="checkbox"/> Brine Disposal <input checked="" type="checkbox"/> Hydrocarbon Storage <input type="checkbox"/> Enhanced Recovery <input type="checkbox"/> Class III <input type="checkbox"/> Class IV	

CASING/TUBING/CEMENT RECORD AFTER PLUGGING AND ABANDONMENT							METHOD OF EMPLACEMENT OF CEMENT PLUGS		
Size	Wt (lb/ft) TB/CSS	Original Amount (CSG)	CSG to be Left in Well	Hole Size	Sacks Cement Used	Type			
16"	55	258	258	20"	400	Class A	<input checked="" type="checkbox"/> Balance Method <input type="checkbox"/> Dump Bailer Method <input type="checkbox"/> Two Plug Method <input type="checkbox"/> Other		
10 3/4"	32.75	1507	1507	13 3/4"	800	Class A			

CEMENT TO PLUG AND ABANDON DATA				Plug #	Plug #	Plug #	Plug #	Plug #	Plug #	Plug #
Size of Hole or Pipe in Which Plug Will Be Placed (Inches)				10.19"		10 1/8"				
Calculated Top of Plug (ft.)						0				
Measured Top of Plug (ft.)						0				
Depth to Bottom of Plug (ft.)				1497'		1497'				
Sacks of Cement to be Used						720				
Slurry Volume to be Used (cu. ft.)						849				
Slurry Weight (lb./gal.)						15.8				
Type of Cement, Spacer or Other Material Used				Bridge Plug		Class A				
Type of Proflush Used						Fresh				

DESCRIPTION OF PLUGGING PROCEDURE

1. Pull Tubing
2. Set Bridge Plug at 1497'
3. Trip in hole with tubing and spot 720 sacks Class A cement in 500' stages from 1497-0'
4. Cut off all casings 3' below grade and weld on 1/2 inch steel plate. Weld MDEQ # on cap
5. Prepare and file MDEQ and EPA Plugging Reports.

ESTIMATED COST OF PLUGGING AND ABANDONMENT					
Cement	\$ -	11,840	Cast Iron Bridge Plug	\$ -	2,800
Logging	\$ -	0	Cement Retainer	\$ -	0
Rig or Pulling Unit	\$ -	5,700	Miscellaneous	\$ -	8,612
	\$ -		Total	\$ -	28,734

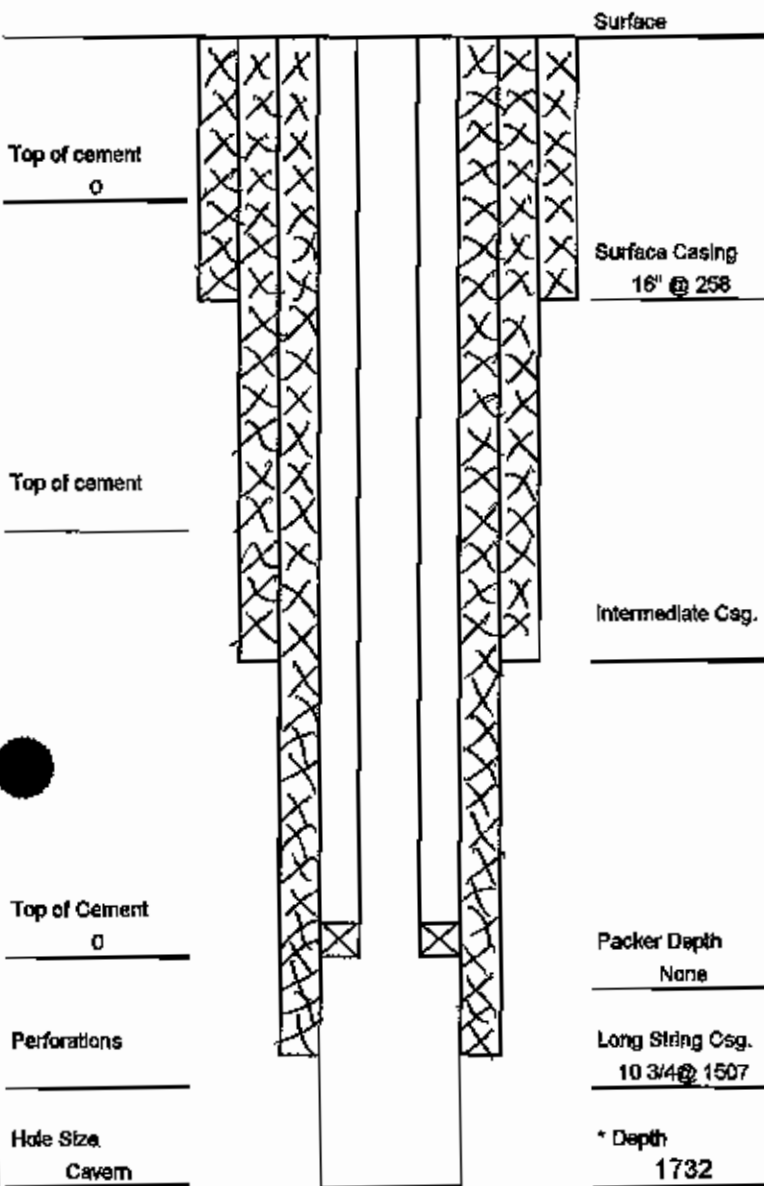
CERTIFICATION

I certify under the penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Reg 40 CFR 144.32)

NAME AND OFFICIAL TITLE Dave Justin Vice President	SIGNATURE 	DATE SIGNED 7/27/2004
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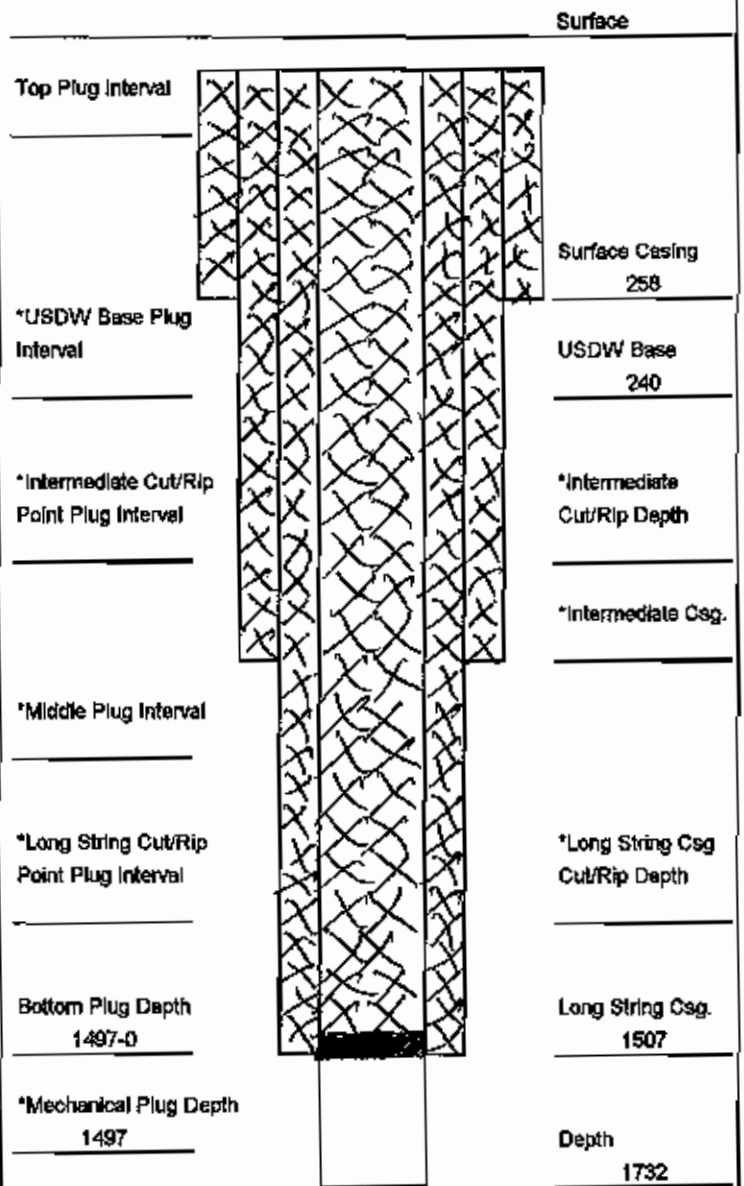
ORIGINAL WELL CONSTRUCTION DURING OPERATION

LPG #7



** Add Any Additional Information
* May not Apply

PLUGGING AND ABANDONMENT CONSTRUCTION



** Add Any Additional Information
* May not Apply

LIST OF ALL OPEN AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED

Specify Open Hole/ Perforations/ Varied Casing	From	To	Formation Name
Open Hole	1507	1732	B- Salt

UNIT STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

PLUGGING AND ABANDONMENT PLAN

WELL NAME & NUMBER, FIELD NAME, LEASE NAME & NUMBER

NAME, ADDRESS, & PHONE NUMBER OF OWNER / OPERATOR

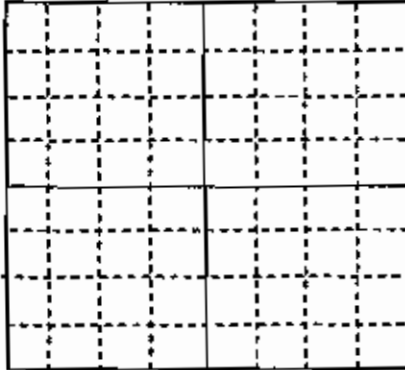
Storage #8

Sunoco Partners Marketing and Terminals LLP
7155 Inkster Rd
Taylor Michigan 48180
313-292-8822

STATE Michigan COUNTY Wayne STATE PERMIT NUMBER 29090

Locate Well and Outline Unit on Section Plat - 640 Acres

SURFACE LOCATION DESCRIPTION
SE 1/4 of NE 1/4 of NE 1/4 of Section 12 Township 3S Range 9E



LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1288 ft From (N/S) North Line of Quarter Section
And 233 ft From (E/W) East Line of Quarter Section

TYPE OF AUTHORIZATION

- Individual Permit
- Rule
- Area Permit

WELL ACTIVITY

- Class I
 - Hazardous
 - Nonhazardous
- Class II
 - Brine Disposal
 - Hydrocarbon Storage
 - Enhanced Recovery
- Class III
- Class IV

Number of Wells in Area Permit _____

US EPA Permit Number _____

CASING/TUBING/CEMENT RECORD AFTER PLUGGING AND ABANDONMENT

Size	Int (API) TBQ/CSSG	Original Amount (CSG)	CSG to be Left in Well	Hole Size	Sacks Cement Used	Type
18"	55	247	247	20"	550	Class A
10 3/4"	32.75	1499	1499	13 3/4"	755	Class A

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- Balance Method
- Dump Bailer Method
- Two Plug Method
- Other

CEMENT TO PLUG AND ABANDON DATA	Plug #	Plug #	Plug #	Plug#	Plug #	Plug #	Plug #
Size of Hole or Pipe in Which Plug Will Be Placed (inches)	10.19"	10 1/5					
Calculated Top of Plug (ft)		0					
Measured Top of Plug (ft)		0					
Depth to Bottom of Plug (ft)	1482	1482					
Sacks of Cement to be Used		720					
Slurry Volume to be Used (cu Ft)		849					
Slurry Weight (lb/gal)		15.6					
Type of Cement, Spacer or Other Material Used	Bridge Plug	Class A					
Type of Preflush Used		Fresh					

DESCRIPTION OF PLUGGING PROCEDURE

1. Pull Tubing
2. Set Bridge Plug at 1482'
3. Trip in hole with tubing and spot 720 sxs Class A cement in 500' stages from 1482-0'
4. Cut off all casings 3' below grade and weld on 1/2 inch steel plate Weld MDEQ # on cap
5. Prepare and file MDEQ and EPA Plugging Reports.

ESTIMATED COST OF PLUGGING AND ABANDONMENT

Cement	\$ -	11,640	Cast Iron Bridge Plug	\$ -	2,800
Logging	\$ -	0	Cement Retainer	\$ -	0
Rig or Pulling Unit	\$ -	5,700	Miscellaneous	\$ -	8,612
	\$ -		Total	\$ -	28,734

CERTIFICATION

I certify under the penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (40 CFR 144.32)

NAME AND OFFICIAL TITLE
Dave Justin Vice President

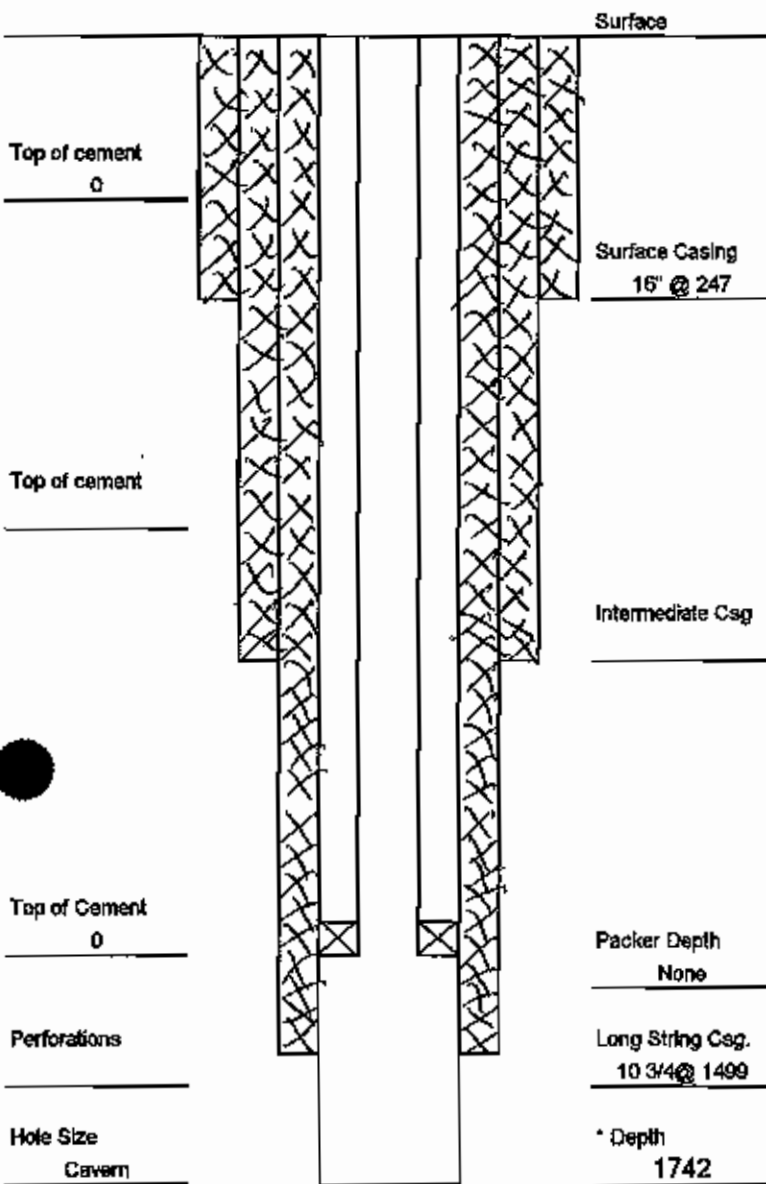
SIGNATURE

DATE SIGNED
7/27/2004

ORIGINAL WELL CONSTRUCTION DURING OPERATION

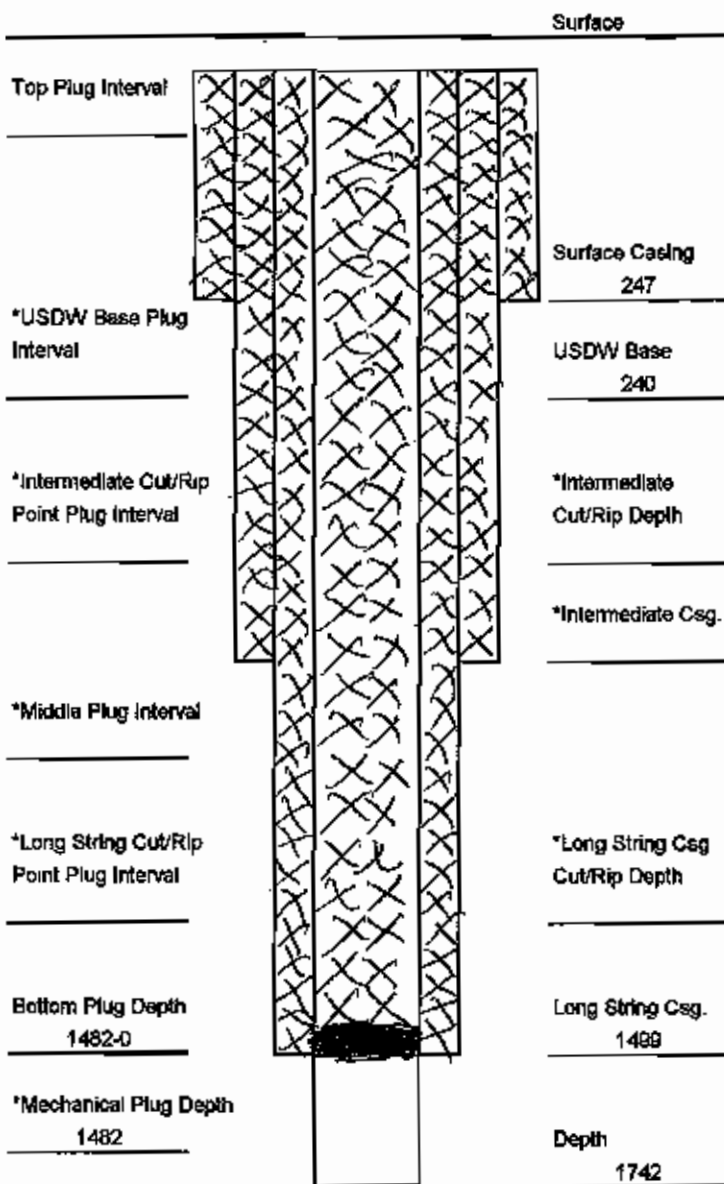
PLUGGING AND ABANDONMENT CONSTRUCTION

LPG #9



** Add Any Additional Information

* May not Apply



** Add Any Additional Information

* May not Apply

LIST OF ALL OPEN AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED

Specify Open Hole/ Perforations/ Varied Casing	From	To	Formation Name
Open Hole	1499	1742	B- Salt

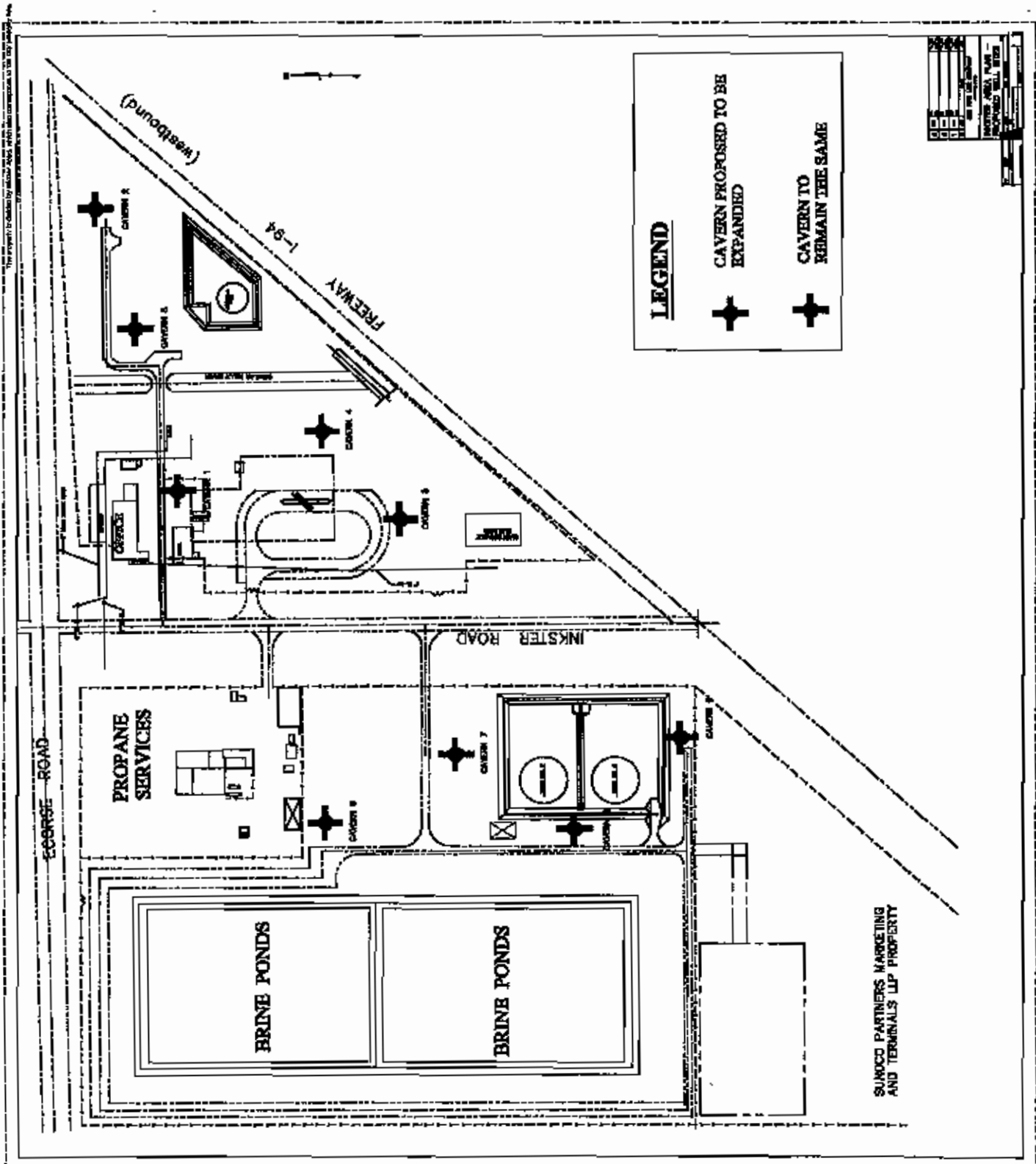
CORRECTIVE ACTION PLAN

No corrective action is required at this time.

Name and locations of wells authorized under this permit

<u>Well Name</u>	<u>Surface Location</u>	<u>Formation</u>
1.LPG Storage #4	SW/4 of NW/4 of NW/4 Section 7-T3S-R10E	"B" Unit of the Salina Group
2.LPG Storage #5	NW/4 of NW/4 of NW/4 Section 7-T3S-R10E	"B" Unit of the Salina Group
3.LPG Storage #7	SE/4 of NE/4 of NE/4 Section 12-T3S-R9E	"B" Unit of the Salina Group
4.LPG Storage #9	SE/4 of NE/4 of NE/4 Section 12-T3S-R9E	"B" Unit of the Salina Group

The property is divided by Inkster Road, which also corresponds to the city property line.





SUMMARY: INJECTION PROCEEDURE

Sunoco Partners Terminal and Marketing LLP.
7155 Inkster Road, Taylor, MI 48180.

PRESENTLY: Brine is used to displace the LPG's (propane, butane, iso-butane) stored in the existing 8 operational caverns (numbered #1 to #9 with #8 being out of service).

The existing facility has two 500,000BBL brine ponds located within the property. These act as brine supplies and reservoirs.

When LPG deliveries are made to the facility, they are pumped into the caverns via an existing network of pipelines. This product displaces the brine resident in the caverns, which is then piped into the brine ponds via a flow through 10,000BBL brine tank that acts like a transition vessel.

When LPG movement out of the caverns is desired, brine from the existing above ground ponds is pumped, via two existing pumps, P11 and P14, into the caverns. This displaces the LPG's from the caverns into the existing pipeline system, which are in turn piped to various locations throughout the pipeline system.

PROPOSED: Use fresh water to displace the LPG's in the caverns targeted for expansion ONLY. All other caverns shall remain in the existing BRINE / LPG service under same conditions. One pond shall be designated to accommodate the caverns not slated for expansion.

When LPG movements are required out of the caverns, we shall inject fresh water into the existing caverns slated for expansion via the existing pumps, P11 and P14. This fresh water shall displace the LPG's, which will then be piped to their final destination.

The fresh water will reside in the cavern for a period of time (+/- 6 months) causing leeching of the caverns and thus expand them. The leeching will convert the fresh water into water containing leached salt, becoming (leached) brine from the cavern formation. Cavern characteristics including pressure shall be monitored at all times and fluid movement controlled to facilitate safe cavern operations. Brine concentrations and scheduled sonar tests will determine the actual cavern growth rate and volume.

Months later when LPG deliveries into the (same) caverns are desired, the leached brine (originally fresh water) resident in the caverns shall be displaced by the LPG's from the pipeline. The leached brine shall be pumped into the existing ponds via the flow through tank.

However, since the existing facility can only accommodate approximately 1,000,000 BBLS of brine storage, it will be necessary to dispose of this brine into the proposed 'Brine Disposal Well' permitted under MI-DEQ and US-EPA.

Any additional brine not available from the ponds shall be obtained from a proposed brine production well.



BRIEF BUSINESS DESCRIPTION

COMPANY: Sunoco Logistics Partners L.P. (NYSE: SXL)

ADDRESS: 10 Penn Center
1801 Market St.
Philadelphia, PA 19103-1699
Phone: 215-977-3000
Fax: 215-977-3409

Sunoco Logistics is a Master Limited Partnership formed by Sunoco, Inc., to acquire, own, and operate a geographically diverse group of crude oil and refined product pipelines, terminalling, and storage facilities. As a part of Sunoco, Inc., we have over 110 years experience in transportation, terminalling, and the storage services. Our business is made up of three segments: the Eastern Pipeline System, Terminal Facilities, and the Western Pipeline System.

Sunoco Logistics Partners owns and operates a large swath of its midstream and downstream assets. This includes nearly 5,000 miles of crude oil and refined product pipelines, located primarily in eastern half of the US, as well as more than 30 terminals and other storage assets related to Sunoco's refining and marketing operations in the Midwest, Gulf Coast, and Eastern seaboard states. Sunoco Logistics Partners also purchases domestic crude and resells it to Sunoco's refining and marketing division. Sunoco subsidiary Sunoco Partners controls about 75% of the company.

FACT SHEET:

I. EASTERN PIPELINE SYSTEM

Our Eastern Pipeline System primarily serves the Northeast and Midwest United States operations of Sunoco, Inc. (R&M) and comprises of, among other assets, approximately 1,700 miles of refined product pipelines. Our refined product pipelines transport refined products from Sunoco, Inc. (R&M)'s Philadelphia, PA, Marcus Hook, PA, Eagle Point, NJ, and Toledo, OH refineries, as well as from third parties, to markets in New York, New Jersey, Pennsylvania, Ohio, and Michigan.

The refined products transported in these pipelines include multiple grades of gasoline, low-octane gasoline for ethanol blending, distillates that include high- and low-sulfur diesel and jet fuel, LPGs (such as propane, butane, iso-butane, and a butane/butylene mixture), refining feed-stocks, and other hydrocarbons (such as toluene and xylene).

A 123-mile wholly owned crude oil pipeline, from Maryville, Michigan to refineries in the Toledo, Ohio area, including a Sunoco, Inc. owned refiner.



II. FACILITY SPECIFIC:

Sunoco Logistics L.P. has a facility addressed at 7155 Inkster Road, Taylor, MI 48180. This facility is physically located at the junction of Ecorse and Inkster Roads within the cities of Romulus and Taylor in Wayne County, southeast Michigan.

The facility is a pipeline terminal used for the storage and distribution of Liquefied Petroleum Gases (LPG's). Storage is in eight (8) working caverns, which have a total storage capacity of about ONE MILLION BARRELS of LPG's. The caverns range in size from 60,000 BBLS to 165,000 BBLS. The first cavern was leached in 1946 and the last capacity enlargement was in 1973. The bulk source of the LPG's stored at this facility originate from Sunoco's Toledo Refinery.

The site has nine (9) caverns solution mined from the SALINAS salt formation. Four of the operating caverns are in the "F" salt layer at 1,175 feet to 1,280 feet and four are in the "B" salt layer at 1,510 feet to 1,730 feet. Sunoco is looking at expanding the latter group. One cavern, # 8, has been plugged and abandoned.

SIC Code that best describes this activity is 2911 - PETROLEUM REFINING.

G

U.S. EPA Region 5 Underground Injection Control Branch
Sunoco Partners Marketing & Terminals, LP
Class III UIC Permit MI-163-3G-A002

Administrative Record Index

Prepared September 8, 2005

<u>Doc#</u>	<u>Date</u>	<u>Document Name</u>	<u>Author</u>	<u>Recipient</u>
1	06/22/04	Sunoco Permit Application	J.Ojany, Sunoco	U.S. EPA, R5
2	07/23/04	Letter	J.Ojany, Sunoco	U.S. EPA, R5
3	07/28/04	Letter Re: Plugging & Abandonment Plans	J. Van Wagnen; Van Wagnen Engineering	U.S. EPA, R5
4	09/01/04	Letter Re: Bond Information		R.Hall, U.S. EPA
5	Various	E-Mail Communications	D.Boyle, Sunoco J.Ojany & R.Hall	J.Ojany & R.Hall
6	10/19/04	Letter Re: Map	J.Ojany, Sunoco	U.S. EPA, R5
7	02/22/05	Technical Review Sheets and Notes	R. Hall, U.S. EPA	
8	03/03/05	Draft Permit	U.S. EPA, R5	
9	03/03/05	Letter Re: Draft Permit	U.S. EPA, R5	J.Ojany, Sunoco
10	03/03/05	Letter Re: Draft Permit	U.S. EPA, R5	Henry Ford Library
11	03/11/05	Public Notice	U.S. EPA, R5	
12	03/11/05	Fact Sheet on Draft Permit	U.S. EPA, R5	
13	04/05/05	Comments on Draft Permit	D.Bower	U.S. EPA, R5
14	04/06/05	Comments on Draft Permit	W.Fulkerson	U.S. EPA, R5
15	05/10/05	Response to Comments	L.Perenchio, U.S.EPA	W.Fulkerson
16	05/12/05	Response to Comments	L.Perenchio, U.S.EPA	D.Bower
17	06/06/05	Letter Re: Final Permit	C. Elly, U.S. EPA	J.Ojany, Sunoco
18	06/06/05	Final Permit	U.S. EPA	Sunoco

UIC Permit MI-163-3G-A002

I, Roger Hall, permit writer for the Underground Injection Control Branch, Region 5, U.S.EPA certify that the administrative record for this final permit decision was complete on June 6, 2005. The administrative record includes, to the best of my knowledge, all documents required under 40 C.F.R. § 124.18. The above Administrative Record Index references all documents in the administrative record for this final permit decision.

9/8/05
Date

Roger Hall
Roger Hall, Permit Writer, Underground Injection
Control Branch, U.S. EPA Region 5