

Petroset Cementing Services Inc

474 Industrial Blvd
 PO Box 1076
 Wooster, OH 44691

171001022

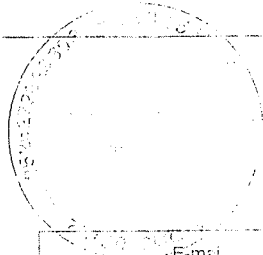
Date	Invoice #
1/22/2011	010-380

Bill To Knox Energy Inc PO Box 215 Gratiot, OH 43740 USA	Ship To WELLS HERBIE TRUST COUNTY: KNOX TWP: MORGAN STATE: OHIO PERMIT: 4502
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Customer	P.C. Number	Terms	Due Date	Rep	Job Description
KNOX ENERGY	90980	Net 30	2/21/2011	Marl	WELLS HERBIE TRUST

Item	Description	Qty	Rate	Amount
201	1st 500 ft Setup	1	820.00	820.00
102	Mileage on Pump Truck	35	4.00	140.00
106	Ton Mileage	591	2.25	1329.75
107	Blending Charge	361	2.50	902.50
401	Class A Cement (Sack)	175	11.25	1968.75
403	Lite Cement	175	6.00	1050.00
303	Calcium Chloride	1,100	0.30	330.00
601	8 5/8" CENTRALIZERS	2	0.00	0.00
602	8 5/8" GUIDE SHOE	1	150.00	150.00

RECEIVED
 JAN 26 2011



Total	\$8340.25
Payments/Credits	0.00
Balance Due	\$8340.25

Phone #
 330-466-0177

E-mail
 petroset@ssinet.com

6



10-420

SERVICE ORDER #

DATE 1-11-11	SERVICE ENGINEER [Signature]
WELL NAME & NO. Hessington #2-1077	
CUSTOMER Knox	COUNTY Knox
ADDRESS P.O. # 90980	PERMIT # [Blank]
	FORMER # [Blank]
	DEF # 761
	TYPE OF SERVICE [Blank]
	OWNER Knox

PRICE REFERENCE	QUANTITY	UOM	MATERIAL AND EQUIPMENT	UNIT PRICE	TOTAL PRICE
201	1	EA	SET UP		
102	35	MI	MILEAGE		
106	554	TM	BULK CARTAGE		
107	361	SKS	BLENDING CHARGE		
401	175	SKS	BULK CEMENT		
403	175	SKS	Liner Cement		
303	1100	LBS	Cash		
601	2	873	Contractor		
602	1	873	Contractor		

I HAVE READ, UNDERSTOOD AND AGREED TO THE TERMS AND CONDITIONS ON THE BACK OF THIS DOCUMENT AND REPRESENT THAT I HAVE FULL POWER AND AUTHORIZATION TO EXECUTE THIS ORDER.

I DO CERTIFY THAT THE EQUIPMENT AND SERVICES ABOVE WERE RECEIVED AND SERVICES WERE PERFORMED IN A PROFESSIONAL TYPE MANNER.

TERMS: 1 1/2% PER MONTH
18% PER ANNUM

DATE	
BY	[Signature]
TITLE	
COMPANY	
PHONE	



P.O. BOX 1076
 WOOSTER, OHIO 44697
 330-264-5069

JOB LOG

CUSTOMER INFORMATION	
NAME	Knox
ADDRESS	
DATE	1-22-11

WELL NAME	Harstine Trust #2-3591	PERMIT	4502
STATE	OH.	COUNTY	KNOX
CONTRACTOR	Kilbinger	TWP	Morgan
		JOB DESCRIPTION	Surface

CEMENT INFORMATION

STAGE	NO.SKS	CEMENT	PLUG DATA - ADDITIVES - SLURRY INFORMATION
1	175	Lite	340 CACH
2	175	Class A	340 CACH
GOOD JOB THANKS!			

HOLE SIZE 12 1/4 TOTAL DEPTH 760 FORMATION _____
 CASING SIZE 8 5/8 TOTAL PIPE 723 USED _____ NEW LB/FT _____
 TUBING SIZE _____ TYPE OF PLUG Cement WOOD _____ RUBBER _____
 DRILL PIPE _____ FLUID TYPE Fresh TYPE OF HEAD _____ PLH SWAGE _____
 RAN WIRE LINE Y N PUMP OUT LINES Y N FLOAT HOLDING Y N
 RETURNS Y N PARTIAL DISPLACEMENT DEPTH 715 BBLS 45 1/2
 TIME ARRIVE ON LOCATION 11:30 TIME LEFT LOCATION 2:30 HOURS WAITING _____
 EQUIPMENT LEFT ON LOCATION _____

TIME	RATE (BBL)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF REMARKS
			TUBING	CASING	
	4	15		200	Load Hor
	3	31		200	mix Lite
	3	21 1/2		200	mix cement
		45 1/2		400	D. 3/4 Placer
2:00				400	plug down
<div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;">2 BBL Profit</div>					

CUSTOMER SIGNATURE William J. Miller

SERVICE ENGINEER SIGNATURE [Signature]

Petroset Cementing Services Inc

474 Industrial Blvd
 PO Box 1076
 Wooster, OH 44691

Invoice

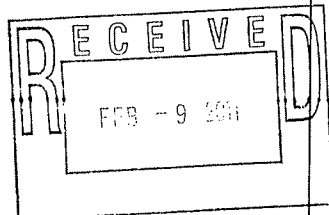
Date	Invoice #
2/7/2011	10-502

Bill To
Knox Energy Inc PO Box 215 Gratiot, OH 43740 USA

Ship To
WELL: HARSTINE TRUST #2-3591 COUNTY: KNOX TWP: MORGAN STATE: OHIO PERMIT: 4502

Customer	P.O. Number	Terms	Due Date	Rep	Job Description
KNOX ENERGY	91032	Net 30	3/9/2011	Mark	LONG STRING

Item	Description	Qty	Rate	Amount
201	1st 500 ft Setup	1		
202	Each Additional 500'	9		
102	Mileage on Pump Truck	35		
106	Ton Mileage	387		
107	Blending Charge	235		
401	Class A Cement (Sack)	230		
303	Calcium Chloride	500		
701	5 1/2" CENTRALIZERS	10		
702	5 1/2" FLAPPER SHOE	1		
706	5 1/2" 2 STAGE PACKER COLLAR	1		



Total	
Payments/Credits	\$0.00
Balance Due	

Phone #
330-466-0177

E-mail
petroset@sssnet.com



10-502 SERVICE ORDER # 11891

DATE 2-7-11	SERVICE ENGINEER mark Hosteth	
WELL NAME & NO. Harstine Trust # 2-3591		
CUSTOMER Knox	COUNTY Knox	PERMIT# 4502
ADDRESS 70, 91032	TWP. Morgan	FORMATION -
	STATE OH.	DEPTH 5081
	OWNER Knox	TYPE OF SERVICE Lang strings

PRICE REFERENCE	QUANTITY	UOM	MATERIAL AND EQUIPMENT	UNIT PRICE	TOTAL PRICE
201	1	EA	SET UP		
202	9	EA	Add setup		
102	35	MI	MILEAGE		
106	387	TM	BULK CARTAGE		
107	235	SKS	BLENDING CHARGE		
401	230	SKS	BULK CEMENT		
303	500	LBS	CACH		
701	10	5t	centralizers		
702	1	5t	Flapper shoe		
706	1	5t	2 stage Packer collar		

I HAVE READ, UNDERSTOOD AND AGREED TO THE TERMS AND CONDITIONS ON THE BACK OF THIS DOCUMENT AND REPRESENT THAT I HAVE FULL POWER AND AUTHORIZATION TO EXECUTE THIS ORDER. By _____ CUSTOMER AUTHORIZED AGENT			SUBTOTAL	
I DO CERTIFY THAT THE EQUIPMENT AND SERVICES ABOVE WERE RECEIVED AND SERVICES WERE PERFORMED IN A PROFESSIONAL TYPE MANNER. TERMS: 1 1/2% PER MONTH 18% PER ANNUM			PLEASE PAY THIS AMOUNT	
By _____ CUSTOMER AUTHORIZED AGENT				



P.O. BOX 1076
 WOOSTER, OHIO 44691
 330-264-5069

JOB LOG

CUSTOMER INFORMATION
 NAME Knox
 ADDRESS _____
 DATE 2-7-11

WELL NAME Herstine Trust #2-3591 PERMIT 4502
 STATE OH. COUNTY Knox TWP Morgan
 CONTRACTOR Kilberger JOB DESCRIPTION long string

CEMENT INFORMATION

STAGE	NO.SKS	CEMENT	PLUG DATA - ADDITIVES - SLURRY INFORMATION
1	100 80	Class A	2 40 CAC
2	150	Class A	2 40 CAC

HOLE SIZE 7 7/8 TOTAL DEPTH 5081 FORMATION _____
 CASING SIZE 5 1/2 TOTAL PIPE 4832 USED _____ NEW LB/FT 17
 TUBING SIZE _____ TYPE OF PLUG _____ WOOD _____ X RUBBER 1/2
 DRILL PIPE _____ FLUID TYPE Fresh TYPE OF HEAD PLH _____ SWAGE
 RAN WIRE LINE Y N PUMP OUT LINES Y N FLOAT HOLDING Y N
 RETURNS Y N PARTIAL _____ DISPLACEMENT DEPTH 4832 BBLs _____
 TIME ARRIVE ON LOCATION 10:00 TIME LEFT LOCATION 2:15 HOURS WAITING _____
 EQUIPMENT LEFT ON LOCATION _____

TIME	RATE (BBL)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF REMARKS
			TUBING	CASING	
	4	55		200	Load Hole
	3	10		200	Mixamt
		-		-	Drop plug
	3	-		-	wash line
12:55	4	112		1100	Displace
	4	2		1700	set Tool
	3	18		200	Mixamt
		-		-	Drop Drop plug
	3	-		-	wash line
	4	95		200	Displace
2:00				500	Phys dam
2:02					Release

Good Job. Thanks

CUSTOMER SIGNATURE [Signature]

SERVICE ENGINEER SIGNATURE [Signature]

Tomastik, Tom

From: Baker, Mike [Mike.Baker@epa.state.oh.us]
Sent: Friday, March 09, 2012 2:02 PM
To: Tugend, Thomas
Cc: Tomastik, Tom; Eggert, Michael; Lowe, Chuck
Subject: Class II Permiot Reviews

Attachments: ODNR Permit Review Summary 2.docx

Ohio EPA Division of Drinking and Ground Waters has completed its review of nine (9) Class II underground injection well permits.

Our review of the Class II permits focused on well construction relative to the protection of underground sources of drinking water (USDW) and the location of the surface facilities relative to public water system source water protection areas and other sensitive hydrogeologic settings.

None of the reviewed Class II permits are within 2,000 feet of a public water system well or within a source water protection area. However, we do have a couple overarching comments concerning the surface casing of the well construction. More specifically, our review assessed the placement of surface casing and cement relative to the lowest most USDW. Ohio EPA would recommend that a class A cement with appropriate additives be specified as well as the use of centralizers to assure an adequate bond.

Attachment A is a summary of our comments concerning each permit application. Please contact Chuck Lowe of my staff at 614-644-2752 if you have questions on the specific comments.

This message was secured by [Zix Corp.](#) (R).

3/9/2012

Attachment A: ODNR Permit Review Summary

9 permits reviewed, including:

- 6 new drills; and,
- 3 conversions of existing wells.

None of the Class II SWDWs reviewed are within 2,000 feet of a PWS well or within a protection area.

New Wells

1. Muskingum Co., Jackson Twp. OOGC #1 Black Run Disposal Well
 - Surface casing depth and amount of cement appear adequate. The type of cement, and number and location of centralizers used on the surface casing should to be specified. Lack of this information limits our review.
 - The injection zone is the Knox through the Mt. Simon; however, completion schematic shows only the Mt. Simon as perforated. The injection zone perforations should be corrected to reflect the revised injection zone.
 - Well surface construction appears sufficient.
2. Mahoning Co., Springfield Twp. D&L #7 Mohawk Printup
 - Surface casing depth and amount of cement appear adequate. The permit to drill specifies 350 sacks of superlite cement – Ohio EPA recommends that Class A be used instead. The number of centralizers and their location should be specified. The lack of this information limits our review.
 - The well is located outside of the Youngstown area of concern.
 - Well surface construction appears sufficient.
3. Mahoning Co., Youngstown Twp. D&L #8 Mohawk Meenchan
 - Well construction comments are the same as for the #7 Mohawk Printup well.
 - The #8 Mohawk Meechan well is within the AOR that has experienced seismic activity. This should be evaluated in siting, construction and injection requirements.
4. Muskingum Co., Union Twp. 1960 Well Services #1 C. Goff
 - Surface casing and amount of cement appears adequate. The type of cement, and number and location of centralizers used on the surface casing should to be specified. Lack of this information limits our review.
 - The plat map shows two small wetland areas that are adjacent to the well and offloading pad. The permittee should be made aware of associated regulatory requirements.
 - Well surface construction appears sufficient.
5. Trumbull Co., Weathersfield Twp. American Water Mgt. #1 AWM
 - Both surface and injection casing depths and cement appear adequate. The type of cement, and number and location of centralizers used on the surface casing should to be specified. Lack of this information limits our review.
 - Open hole disposal into the "Newburg". There are sixteen existing "Clinton" wells within the AOR that are likely un-cemented above the "Clinton" cement top and the base of the surface casing. These well bores could act as a conduit for fluid migration (i.e. either brine or brine displacing formation waters).

6. Trumbull Co., Weathersfield Twp. American Water Mgt. #2 AWM
 - Surface casing depth appears adequate and cemented to surface. The type of cement, and number and location of centralizers used on the surface casing should to be specified. Lack of this information limits our review.
 - The injection casing cement top is shown to surface on the diagram, but states the cement top is at 4000 feet. This should be clarified because the plat map show 112 feet between the two disposal wells (same concerns as outlined in #5).

Converted Wells

1. Athens Co., Rome Twp., D.T. Atha #1 M. Frost
 - Surface casing depth appears adequate; however, no inspectors report to verify cement to surface (315 sacks used on completion report). The surface cement should be verified.
 - Operator proposes to squeeze off the existing perfs in the Berea and Ohio Shale, but doesn't show the proposed injection zone perfs.
 - Injection casing and tubing construction depths don't agree with the well schematic diagram. This should be resolved.
2. Knox Co., Morgan Twp., Knox Energy #2 Harstine Trust
 - Surface casing and cement job appear adequate.
3. Morgan Co., Marion Twp., Broad Street Energy #102 Cook
 - Surface casing and cement volume (90 sacks) appear adequate.
 - Well surface construction appears adequate.

Geologic Review for Class II Wells

Application No: aPATT020442

Well Type: SWD (water injection-disposal)

Proposed TD: 4,750 feet

Proposed Formation: B Zone

Knox County, Morgan Township

Study area investigated ~ 15 mile radius centered on the proposed well location for all maps except the gravity and magnetic maps, which used 30 mile radius.

Gravity Bouguer Anomaly

- The gravity Bouguer Anomaly map shows a northwest-southeast trending gravity low 8 miles southwest of the permit application.
- A north-south trending gravity low is present approximately 22 miles southwest of the proposed well location.

Gravity Free Air

- The free air map shows a northwest-southeast trending gravity low 16 miles south of the permit application.
- A north-south gravity low located approximately 25 miles southeast of the permit application.
- A northeast-southwest trending gravity high is located about 12 miles northeast of the permit application.

Magnetic First Derivative

- There are several northeast-southwest and north-south trending magnetic lows in the area of the permit application.
- There are several northeast-southwest and north-south trending magnetic highs in the area.

Magnetic Second Derivative

- There are several northeast-southwest and north-south trending magnetic lows in the area of the permit application.
- There are several northeast-southwest and north-south trending magnetic highs in the area.

Magnetic Reduce Dipole

- Three major magnetic lows are in the vicinity. A north-south trending low 10 miles east of the proposed well location. Two northeast-southwest trending lows are southwest of the permit application.
- The permit application is located in a northwest-southeast trending magnetic high.

Precambrian Structure from PG-23

- An unnamed north-south trending fault is located less than 2 miles west of the permit application. This fault is known from the COOCORP line, and its orientation is uncertain based on the Precambrian surface. Relative motion along the fault is down to the west.

Knox Structure

- An unnamed north-south trending fault is located less than 2 miles west of the permit application. This fault is known from the COOCORP line, and its orientation is uncertain.

- The Knox structure map shows the permit application is located on a northeast plunging syncline.

Trenton Structure

- An unnamed north-south trending fault is located less than 2 mile west of the permit application. This fault is known from the COOCORP line, and its orientation is uncertain.
- The Trenton structure map shows the permit application is located on a northeast plunging syncline.

EGSP Onondaga Structure

- Small variation in strike occur along contours of the EGSP Onondaga map. These variations do not coincide with any known faults; however, these variations occur with a northwest-southeast trend.

MRCSP Onondaga Structure

- Nothing of note.

EGSP Berea Structure

- Small variation in strike occur along contours of the EGSP Berea map. These variations do not coincide with any known faults. These variations occur with a northwest-southeast trend.

Mississippian/Pennsylvanian Unconformity Surface

- Unit absent.

Middle Kittanning Coal Structure

- Unit absent.

Upper Freeport Coal Structure

- Unit absent.

Pittsburgh Coal Structure

- Unit absent.

Bedrock Geology

- The top of bedrock for the permit application is the Upper Pennsylvanian Monongahela Group.

Bedrock Topography

- The bedrock topography map indicates the permit application is mapped in a northwest-southeast trending topographic low.

EGSP Aerial Photo Lineament

- Numerous lineaments generally less than 1 mile in length have been interpreted from aerial photos by Gray and others (1982) over and in the immediate vicinity of the permit application with 2 dominant directions oriented northwest-southeast and northeast-southwest.

EGSP LANDSAT Lineament

- Three main lineament trends are in the area of the permit application. Less than 1 mile east of the permit application, a lineament trends Northwest-southeast.
- Located just over 1 mile northeast is a northeast-south west trending lineament.

- Less than 2 mile to the northwest, a north-northwest trending lineament.

Mason Lineament

- One mile southwest of the permit application, a lineament strikes at N 35° W. This lineament is consistent with the northwest southeast trending topographic low in the area.
- Approximately 6 miles due west of the permit application is a lineament which strikes at N 60° W.
- Approximately 10 miles due east of the proposed well location a lineament strikes at N 5° W.

Oil and gas fields

- Production in the study area is in the Pennsylvanian, Berea, and Devonian Shale. The nearest production is in the Berea. To the south, many production areas have an extent parallel to Mason's (1999) lineaments. Some extents producing fields also have extents which coincide with EGSP LANDSAT lineaments (Gray and others, 1982).

Earthquakes

- The closet earthquake occurred approximately 20 miles southwest of the proposed well location. The earthquake occurred in 1926 and had a magnitude of 3.6.

Injection Wells

- There are 9 SWD (active salt water disposal) wells within area that are injecting in the Queenston Shale, Ohio Shale, Bedford Shale, and Berea Sandstone. The nearest injection well is a SWD well approximately 3 miles west of the permit application.
- There 7 ISWD (inactive salt water disposal) wells. These wells injected in to the Queenston Shale, Ohio Shale, Bedford Shale, and Berea Sandstone.
- There is 1 EOR (enhanced oil recovery) well.
- There is 1 IEOR (inactive enhanced recovery) well.

To summarize, the Starr fault system is the closest known fault, and is approximately 21 mile to the northwest (Baranoski, 2002). Lineaments in the vicinity coincide with small structural variations seen in the EGSP Onondaga and Berea maps (Gray and others, 1982), oil and gas field extents, and drainage patterns. The closet earthquake occurred approximately 20 miles southwest of the proposed well location. The earthquake occurred in 1926 and had a magnitude of 3.6. There are currently 9 SWD wells injecting in the Queenston Shale, Ohio Shale, Bedford Shale, and Berea Sandstone.

Geologic Review for Class II Wells

Application No: aPATT020442

Well Type: SWD (water injection-disposal)

Proposed TD: 4.750 feet

Proposed Formation: B Zone

Knox County, Morgan Township

Study area investigated ~ 15 mile radius centered on the proposed well location for all maps except the gravity and magnetic maps, which used 30 mile radius.

Gravity Bouguer Anomaly

- The gravity Bouguer Anomaly map shows a northwest-southeast trending gravity low 8 miles southwest of the permit application.
- A north south trending gravity low is present approximately 22 miles southwest of the proposed well location.

Gravity Free Air

- The free air map shows a northwest-southeast trending gravity low 16 miles south of the permit application.
- A north-south gravity low located approximately 25 miles southeast of the permit application.
- A northeast-southwest trending gravity high is located about 12 miles northeast of the permit application.

Magnetic First Derivative

- There are several northeast-southwest and north-south trending magnetic lows in the area of the permit application.
- There are several northeast-southwest and north-south trending magnetic highs in the area.

Magnetic Second Derivative

- There are several northeast-southwest and north-south trending magnetic lows in the area of the permit application.
- There are several northeast-southwest and north-south trending magnetic highs in the area.

Magnetic Reduce Dipole

- Three major magnetic lows are in the vicinity. A north-south trending low 10 miles east of the proposed well location. Two northeast-southwest trending lows are southwest of the permit application.
- The permit application is located in a northwest-southeast trending magnetic high.

Precambrian Structure from PG-23

- An unnamed north-south trending fault is located less than 2 mile west of the permit application. This fault is known from the COOCORP line, and its orientation is uncertain based on the Precambrian surface. Relative motion along the fault is down to the west.

Knox Structure

- An unnamed north-south trending fault is located less than 2 mile west of the permit application. This fault is known from the COOCORP line, and its orientation is uncertain.

- The Knox structure map shows the permit application is located on a northeast plunging syncline.

Trenton Structure

- An unnamed north-south trending fault is located less than 2 mile west of the permit application. This fault is known from the COOCORP line, and its orientation is uncertain.
- The Trenton structure map shows the permit application is located on a northeast plunging syncline.

EGSP Onondaga Structure

- A consistent variation in strike occurs due west of the permit application. This trend is northwest-southeast.

MRCSP Onondaga Structure

- Nothing of note.

EGSP Berea Structure

- A consistent variation in strike occurs due north of the permit application. This trend is northwest-southeast and apparently intersects the location of the unnamed fault known from the COOCORP line.
- Consistent northwest-southeast trend suggests the unnamed north-south fault know from the COOCORP line my strike to the northwest-southeast.
- Location of permit application may be less than a mile from the fault.

Mississippian/Pennsylvanian Unconformity Surface

- Unit absent.

Middle Kittanning Coal Structure

- Unit absent.

Upper Freeport Coal Structure

- Unit absent.

Pittsburgh Coal Structure

- Unit absent.

Bedrock Geology

- The top of bedrock for the permit application is the Mississippian Black Hand Sandstone Member of Cuyahoga Formation.

Bedrock Topography

- The bedrock topography map reflects drainage patterns at numerous orientations, from north-south to east-west.

EGSP Aerial Photo Lineament

- Numerous lineaments generally less than 1 mile in length have been interpreted from aerial photos by Gray and others (1982) over and in the immediate vicinity of the permit application with 2 dominant directions oriented northwest-southeast and northeast-southwest.

EGSP LANDSAT Lineament

- Three main lineament trends are in the area of the permit application. The lineament is approximately 2 miles west of the proposed well

location and trends north-south. The other lineament trends are northeast-southwest and northwest-southeast.

Mason Lineament

- The closest lineament is 2 miles northwest of the permit application, and strikes N45°E.
- Approximately 10 miles northwest of the permit application is a lineament which strikes at N45°W.
- Approximately 3 miles southwest of the proposed well location a lineament strikes at N10°E at the south, then curves via straight segments to strike at N45°W, and intersect the closet lineament. This intersection is approximately 3 miles southwest of the permit application.
- Approximately 8 miles southeast of the permit application is a lineament which strikes at N45°E.
- Approximately 10 miles northeast of the permit application is the N75°W striking Coshocton fault zone.

Oil and gas fields

- Production in the study area is in the Berea, Devonian Shale, Big Lime, Clinton, Trenton, and Knox. The nearest production is in the Clinton and the Big Lime.

Earthquakes

- There is no recorded seismicity in the immediate vicinity of the permit application. The closest earthquake occurred approximately 31 miles west of the proposed well location. The earthquake occurred in 1873 and had a magnitude of 3.8.

Injection Wells

- There are 5 SWD (active salt water disposal) wells within area that are injecting in the GRNT (unknown code), Trempealeau Formation, and Cabot Head Shale. The nearest active injection well is an SWD well approximately 6 miles east of the permit application.
- There is 1 ISWD (inactive salt water disposal) well, which injected into unknown shale.
- There are 3 IEOR (inactive enhanced recovery) well, which injected in to the Berea Sandstone.

To summarize, the closest known fault intersects the COOCORP line approximately 8 mile to the northwest of the permit application (Baranoski, 2002). This faults orientation is a concern to the Division of Geological Survey. If the trend of this fault matches north-south lineament trends (Gray and others, 1982) the fault may be 2 miles due west of the permit application. If the fault matches trends mapped on the Onondaga and Berea structure maps (Gray and others, 1982), then the permit application may be directly on the fault. Lineaments in the area reflect drainage patterns. The closest earthquake occurred in 1873, and was 31 miles west. There are 5 SWD (active salt water disposal) wells within area that are injecting in the GRNT (unknown code), Trempealeau Formation, and Cabot Head Shale.

INTER-OFFICE MEMO

TO: Tom Benko, Mineral Resources Inspector
FROM: Andrew Adgate, Geologist AA
SUBJECT: Application and Site Evaluation for a SWIW permit
DATE: July 24, 2012

The Division of Oil and Gas Resources Management has received an application for the proposed saltwater injection well as described below:

OPERATOR: Knox Energy Inc.
WELL NAME & NUMBER: Harstine Trust SWD # 2-3591
PERMIT NUMBER: Conversion of existing well, SWIW #10
LOCATION: 2650' SL & 890' WL of Lot 6, Morgan Twp., Knox County
PROPOSED INJECTION ZONE: Trempealeau dolomite
DATE RECEIVED: February 27, 2012

Please inspect proposed site and evaluate for any potential water wells or surface bodies of water within close proximity that would require any additional permit conditions for the construction of the SWIW surface facilities. Please e-mail me a copy of the site inspection report with any recommendations.

APPLICATION FOR A PERMIT (Form 1)
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT
 2045 Morse Road, Building H-3
 COLUMBUS, OHIO 43229-6605
 (614) 265-6633

SEE INSTRUCTIONS ON PAGE 2 (BACK)

1. I, We (applicant) Knox Energy, Inc		2. Owner # 6295	
(address) 11872 Worthington Rd., Pataskala, OH 43062		Phone # 740-927-6731	
hereby apply this date 1/6/2012		for a permit to:	
<input type="checkbox"/> Reissue (check appropriate blank)	<input type="checkbox"/> Revised Location	<input checked="" type="checkbox"/> Convert	
<input type="checkbox"/> Drill New Well	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Deepen	
<input type="checkbox"/> Drill Directionally	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Reopen	
<input type="checkbox"/> Drill Horizontally	<input type="checkbox"/> Orphan Well Program	<input type="checkbox"/> Temporary Inactive	
3. TYPE OF WELL: <input type="checkbox"/> Oil Gas <input type="checkbox"/> Annular Disposal <input checked="" type="checkbox"/> Saltwater Injection			
<input type="checkbox"/> Stratigraphic Test <input type="checkbox"/> Gas Storage <input type="checkbox"/> Other (explain): _____			
<input type="checkbox"/> Solution Mining* <input type="checkbox"/> Enhanced Recovery* * if checked, select appropriate box below			
<input type="checkbox"/> Input/Injection <input type="checkbox"/> Water Supply <input type="checkbox"/> Observation <input type="checkbox"/> Production/Extraction			
4. MAIL PERMIT TO Please Fax to: 740-964-1742 KNOX ENERGY, INC. P.O. BOX 705 NEW ALBANY, OH 43054		20. TYPE OF TOOLS: <input type="checkbox"/> Cable <input type="checkbox"/> Air Rotary <input type="checkbox"/> Cable / Air Rotary <input checked="" type="checkbox"/> Air / Fluid Rotary <input type="checkbox"/> Cable / Fluid Rotary <input type="checkbox"/> Fluid Rotary <input type="checkbox"/> Cable / Air / Fluid Rotary <input type="checkbox"/> Service Rig	
5. COUNTY: KNOX		21. PROPOSED CASING PROGRAM: 8 5/8" SET TO 735'. 5 1/2" TO 4842'.	
6. CIVIL TOWNSHIP: MORGAN			
7. SECTION: _____ 8. LOT: 6			
9. FRACTION _____ 10. QTR: 4TH			
11. TRACT/ALLOT: _____			
12. WELL #: 2-3591			
13. LEASE NAME: HARSTINE TRUST			
14. PROPOSED TOTAL DEPTH: 4750			
15. PROPOSED GEOLOGICAL FORMATION: B ZONE			
16. DRILLING UNIT IN ACRES (must be same as acres indicated on plat) : 40		22. FIRE AND MEDICAL DEPARTMENT TELEPHONE NUMBERS (closest to well site): Fire: 911 - ____ - ____ Medical: 911 - ____ - ____	
17. IF PERMITTED PREVIOUSLY: API #: 34-083-2-4502-00-00		23. MEANS OF INGRESS AND EGRESS: Township Road: _____ County Road: CR 28 - Morgan Center Rd Municipal Road: _____ State Highway: _____	
OWNER: WELL #: LEASE NAME TOTAL DEPTH GEOLOGICAL FORMATION:			
18. IF SURFACE RIGHTS ARE OWNED BY THE OHIO DEPARTMENT OF NATURAL RESOURCES: Division Name: _____ Division Phone: _____		24. IS THE WELL LOCATION OR PRODUCTION FACILITIES WITHIN AN URBANIZED AREA AS DEFINED BY 1509.03? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
19. LANDOWNER ROYALTY INTEREST: Is There An Attached List? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
NAME: Harstine Trust, Lyle & Faye ADDRESS: 2359 Morgan Center Rd., Utica, OH 43080			
RECEIVED FEB 27 2012			

I, the undersigned, being first duly sworn, depose and state under penalties of law, that I am authorized to make this application, that this application was prepared by me or under my supervision and direction, and that the facts stated herein are true, correct and complete, to the best of my knowledge.

I, the undersigned, further depose and state that I am the person who has the right to drill on the tract or drilling unit and to drill into and produce from a pool and to appropriate the oil or gas that I produce therefrom either for myself or others as described in this application. And furthermore, I the undersigned, being duly sworn, depose and state at this time that I am not liable for any final nonappealable order of a court for damage to streets, roads, highways, bridges, culverts, or drainage ways pursuant to Section 5577.12 of the Ohio Revised Code (ORC). I, the undersigned, further depose and state that all notices required by 1509.06 (A) (9) ORC for this application have been duly provided by me. If applying for a permit to plug and abandon a well, I hereby certify that the written notices, as required in Section 1509.13, ORC, have been given.

That I hereby agree to conform with all provisions of Chapter 1509., ORC, and Chapter 1505., OAC, and to all orders and conditions issued by the Chief, Division of Mineral Resources Management.

Signature of Owner/Authorized Agent

Nicole Venteris

Name (Type or Print)

Nicole Venteris

Title **Geologist**

If signed by Authorized Agent, a certificate of appointment of agent must be on file.

Sworn to and subscribed before me this the **6th** day of **Jan.**, 2012.

Mark A. Neese
(Notary Public)

MARK A. NEESE **8-28-16**
Date Commission Expires

**SUPPLEMENT TO APPLICATION
PERMIT FOR A SALTWATER INJECTION WELL (Form 210)**

Ohio Department of Natural Resources, Division of Oil and Gas Resources Management
2045 Morse Road, Bldg H3
Columbus, OH 43229-6693

AREA OF REVIEW. An application for a saltwater injection well (SWIW) will be evaluated on the basis of an "area of review" surrounding the proposed well. The area of review for wells in which injection of greater than two hundred barrels per day is proposed shall be the area circumscribed by a circle with the center point at the location of the injection well and a radius of one-half mile. The area of review for wells in which a maximum injection of two hundred barrels per day or less is proposed shall be the area circumscribed by a circle with the center point at the location of the injection well and a radius of one-quarter mile.

31. PROPOSED INJECTION ZONE

Geological Formation: TREMPEALEAU
Injection Interval: From: 4668' feet to 4750'
Geologic description of injection zone: Dolomite; trace of vfg sand, trace of glauconite

32. WELL CONSTRUCTION AND OPERATION

- A. Description of the proposed casing and cement program for new wells, or of the casing, cementing or sealing with prepared clay for existing wells to be converted:
8 5/8" R3 24# J-55 set at 739', 175 sx Lite + 175 sx Reg. 3% Ca.
5 1/2" R3 P110 ERW set at 4842', 80 sx Class A 3% Ca
- B. Proposed method for testing the casing:
Pressured up on 8 5/8" to 600# and held for 15 minutes.
Pressured up on 5 1/2" to 1500# and held for 5 minutes.
- C. Description of the proposed method for completion and operation of the injection well:
Run Casing Collar locator and cement bond log. Set a Baker packset packer on 2 7/8" upset J-55 injection tubing.
- D. Description of the proposed unloading, surface storage, and spill containment facilities:
Tank trucks will unload parked on 45' x 40' concrete pad with sump.
Tank filters + pumps will be within 60' x 50' compacted clay dike with a 30 mil liner. Liner covered with 4" of sand and gravel.
The dike will be sufficient size to contain the volume of all tanks. The containment volume will take into account the area taken up by the tanks + equipment within the diked area.

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33. PROPOSED INJECTION VOLUMES

- A. Indicate the estimated amount of saltwater to be injected into the proposed injection well per day:
AVERAGE: 1000 BBL/DAY MAXIMUM: 2000 BBL/DAY
- B. Indicate the method to be used to measure the actual amount of saltwater injected into the well:
Halliburton flow meter with totalizer.

34. PROPOSED INJECTION PRESSURES

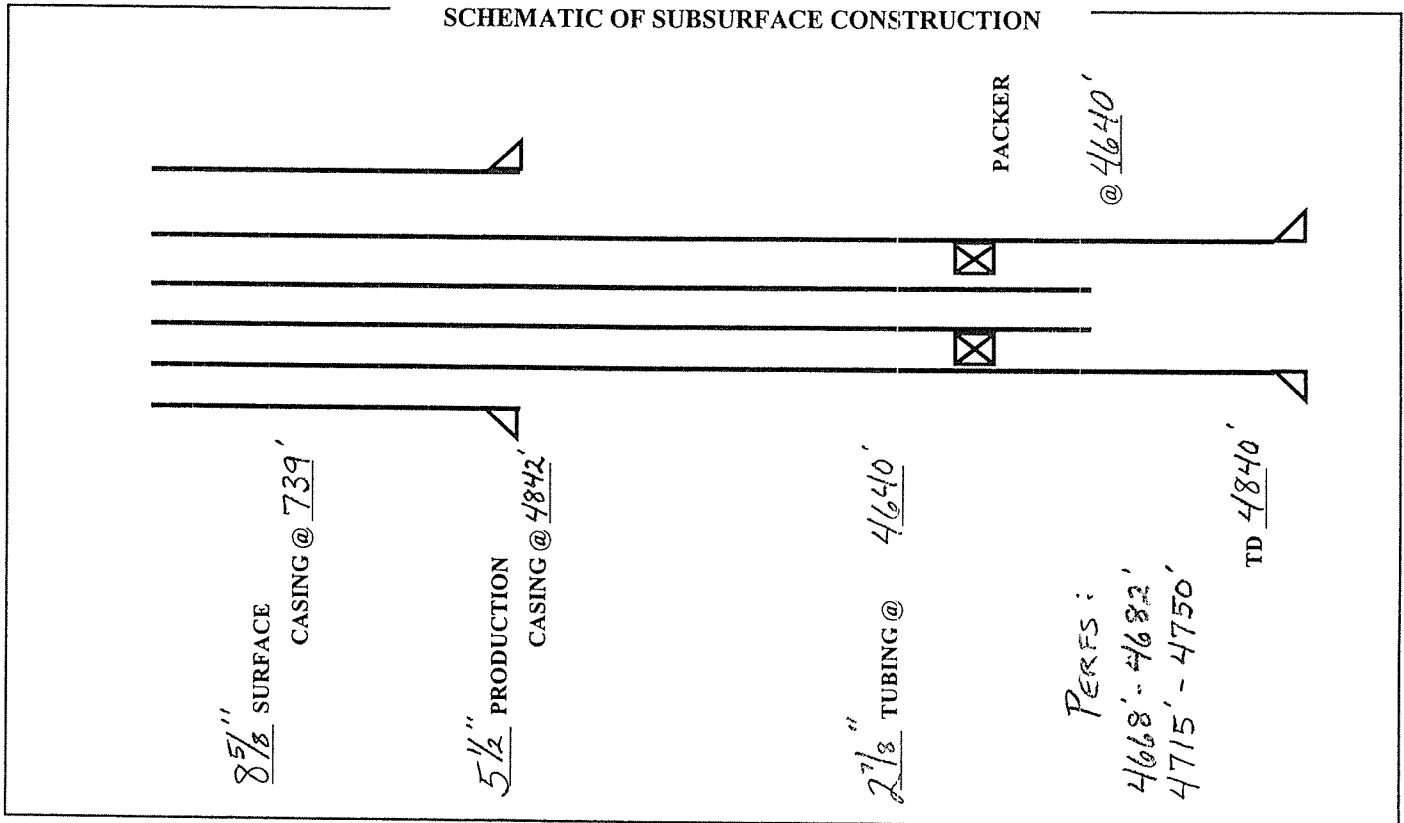
- A. Indicate the estimated pressure to be used for injection of saltwater into the proposed injection well:
AVERAGE: 1200 psi 1000 psi MAXIMUM: 1400 psi 1075 psi
- B. Indicate the method to be used to measure the actual daily injection pressure:
Pressure gauge

35. PROPOSED CORRECTIVE ACTION

Explain any corrective action proposed for wells penetrating the proposed injection formation or zone within the area of review:

NO such wells in the area of review.

36. **MAP.** Each application for a permit shall be accompanied by a map or maps showing and containing the following information:
- A. The subject tract of land on which the proposed injection well is to be located.
 - B. The location of the proposed injection well on the subject tract established by an Ohio registered surveyor showing the distances in feet from the proposed well site to the boundary lines on the subject tract;
 - C. The geographic location of all wells, penetrating the formation proposed for injection regardless of status, within the area of review;
 - D. All holders of the land owner's royalty interest of record, or holders of the severed oil and gas mineral estates of record in the subject tract;
 - E. All owners or operators of wells producing from or injecting into the same formation proposed as the injection formation.
37. **SCHEMATIC DRAWING OF SUBSURFACE CONSTRUCTION.** Label the schematic drawing below indicating size and setting depth of surface casing, intermediate (if any) and production casings; amount of cement used, measured or calculated tops of cement; size and setting depth of tubing; type and setting depth of packer; geologic name of injection zone showing top and bottom of injection interval. If the proposed input well design is substantially different from the schematic below, attach on a separate sheet a schematic of your proposal labeled with the above information.



38. Public notice of an application for an enhanced recovery project is required by law. In addition, the applicant must submit, on an attached sheet, a list of the names and address of those persons required to receive personal notice in accordance with Rule 1501:9-5-05(E)(1), of the Ohio Administrative Code.

After submitting the application, and after a determination by the Division that it is complete as required by the rules of the Division, a legal notice must be published by the applicant in a newspaper of general circulation in the area of review. The legal notice must contain the information described in Rule 1501:9-5-05(E)(1) of the Ohio Administrative Code. A copy of the notice must be delivered to all owners or operators of wells within the area of review producing from or injecting into the same formation proposed as the injection formation. Proof of publication, publication date, and an oath as to the delivery to those entitled to receive personal notice under this method must be filed with the Division within thirty days after the Division determines that the application is complete.

In addition, notice of all applications for enhanced recovery projects will be published in the Division's Weekly Circular.

The undersigned hereby agrees to comply with all provisions for an enhanced recovery project as required by Chapter 1501:9-5 of the Ohio Administrative Code. In addition, the undersigned deposed and says that he shall conform to all provisions of Section 1509.072 of the Ohio Revised Code, and to all orders and rules issued by the Chief, Division of Mineral Resources Management.

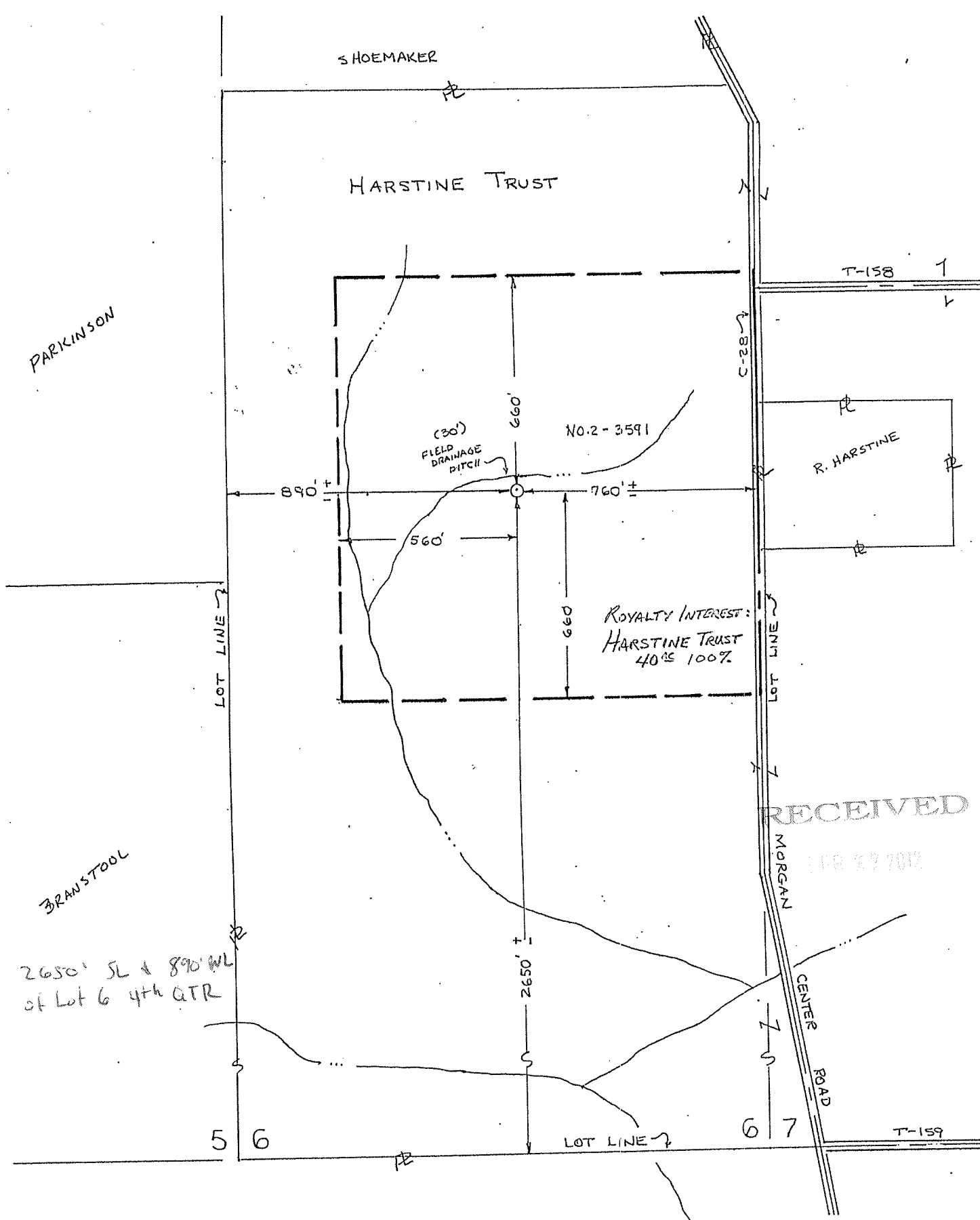
Owner/Authorized Agent (Type or Print): MARK D. JORDAN
 Signature of Owner/Authorized Agent: *Mark D. Jordan* Title: PRESIDENT
 Permanent Address of Home Office: P.O. Box 705, NEW ALBANY, OH 43054

If signed by Authorized Agent, a certified copy of appointment of agent must be on file with the Division.

SWORN to and subscribed before me this 17th day of January, 2012.

(SEAL)

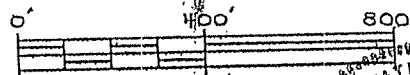
Mark A. Neese
 MARK A. NEESE Notary Public
8-28-16
 Date Commission Expires



I hereby certify that all drilling or producing wells within 1000 feet and all buildings and streams within 200 feet have been shown, there are no drilling unit lines nearer than 500 feet, that this plat is true and correct and was prepared according to the current State of Ohio, Department of Natural Resources, Division of Oil and Gas Regulations.

Gary D. Saling 5-7192
REG. SURVEYOR

SCALE: 1" = 400'

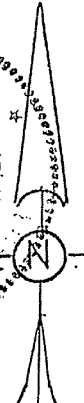
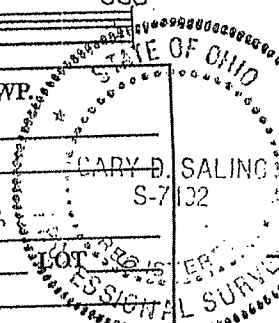


OPERATOR KNOX ENERGY, INC.
 ADDRESS P.O. Box 705 NEW ALBANY, OH. 43054
 SURFACE HARSTINE TRUST
 LANDOWNER
 MINERALS HARSTINE TRUST
 WELL NO. 2-3591 DRILLING UNIT AC. 40
 COUNTY KNOX
 TWP. MORGAN
 QUAD. HUNT

SUBDIVISION CIVIL TWP. _____
 TWP. 5N
 RANGE 12W
 QUARTER TWP. 4th
 SECTION _____
 TRACT _____
 ALLOTMENT _____
 FRACTION _____ OTHER _____

OHIO PLANE COORDINATES
 X 2,022,887 Lat. 40° 16.1671
40.269452°
 Y 219,609 Long. 82° 25.0700

ELEV. 1050' DATE: 10-27-10



82.417833°