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United States Environmental Protection Agency

# Underground Injection Control

	EPA ID Number		
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<b>©EPA</b>	erground injection Cor Permit Application			T/A C
(Colle	cted under the authority of the Ster Act. Sections 1421, 1422, 40	Safe Drinking U		
wa		uctions Before Starting	g	
	For Officia			
Application approved Date received	Permit Number	Well	ID	FINDS Number
mo day year mo ɗay	year			
II. Owner Name and J	Address		III. Operator Name and	d Address
Owner Name West Bay Exploration Company		Owner Name West Bay Explor	ation Company	
Street Address 13685 South West Bay Shore Drive, Suit	Phone Number (231) 946-0200	Street Address	est Bay Shore Suite #20	Phone Number (231) 946-0200
City	State ZIP CODE	City	ar way shore suite #20	State ZIP CODE
Traverse City	MI 49684	Traverse City		MI 49684
	-1 -1	VI. Legal Contact		/II. SIC Codes
Yes X No	Private 5	Owner Operator	1311	
	Other	7 -6		
	VIII. Well Sta	tus <i>(Mark "x")</i>		
A Date Started	B. Modificat	ion/Conversion	x C. Proposed	
mo day year Operating				****
	IX. Type of Permit Requested	(Mark "x" and specify	if required)	
A. Individual B. Area	Number of Existing Wells	Number of Proposed	Wells Name(s) of field(s	s) or project(s)
	0	1	Napoleon	
	X Cizes and Tune	of Well (see reverse)		
A. Class(es) B. Type(s) (	C. If class is "other" or type is co		D. Number of wells pe	r type (if area permit)
(enter code(s)) (enter code(s))				
II D				
XI. Location of	Well(s) or Approximate Center o	f Field or Project		XII. Indian Lands (Mark 'x')
Latitude Longitude	Township and Range			Yes
Deg         Min         Sec         Deg         Min         Sec           42         06         16         84         11         08		W 665 S	ine Feet From Line 1407 W	R No
	XIII. Att	achments		
(Complete the following questions on a sepa	• •	<del></del>	·	A44-1-
For Classes I, II, III, (and other classes) comp required. List attachments by letter which a			(pp 4-6) as appropriat	e. Augen maps where
	XIV. Ce	rtification		
i certify under the penaity of law that I have pand that, based on my inquiry of those indivaccurate, and complete. I am aware that the imprisonment. (Ref. 40 CFR 144.32)	iduals immediately responsible	for obtaining the infor	rmation, I believe that th	e information is true,
A. Name and Title (Type or Print) Timothy Brock-Agent				ne No. (Area Code and No.) 946-0200
C. Signatura MBally			(*****)	

EPA Form 7520-6 (Rev. 12-08)

# Well Class and Type Codes

Class | Wells used to inject waste below the deepest underground source of drinking

water.

Type "I" Nonhazardous industrial disposal well

"M" Nonhazardous municipal disposal well

"W" Hazardous waste disposal well injecting below USDWs

"X" Other Class I wells (not included in Type "I," 'M," or "W")

Class II Oil and gas production and storage related injection wells.

Type "D" Produced fluid disposal well

"R" Enhanced recovery well

"H" Hydrocarbon storage well (excluding natural gas)

"X" Other Class II wells (not included in Type "D," "R," or "H")

Class III Special process injection wells.

Type "G" Solution mining well

"S" Sulfur mining well by Frasch process

"U" Uranium mining well (excluding solution mining of conventional mines)

"X" Other Class III wells (not included in Type "G," "S," or "U")

Other Classes Wells not included in classes above.

Class V wells which may be permitted under §144.12. Wells not currently classified as Class I, II, III, or V.

# **Attachments to Permit Application**

# Class Attachments

I new well A, B, C, D, F, H – S, U existing A, B, C, D, F, H – U

Il new well A, B, C, E, G, H, M, Q, R; optional – I, J, K, O, P, U existing A, E, G, H, M, Q, R, – U; optional – J, K, O, P, Q

Ill new well A, B, C, D, F, H, I, J, K, M – S, U existing A, B, C, D, F, H, J, K, M – U

Other Classes To be specified by the permitting authority

# INSTRUCTIONS - L lerground Injection Control (UIC ermit Application

Paperwork Reduction Act: The public reporting and record keeping burden for this collection of information is estimated to average 224 hours for a Class I hazardous well application, 110 hours for a Class I non-hazardous well application, 67 hours for a Class II well application, and 132 hours for a Class III well application. Burden means the total time, effort, or financial resource expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal Agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to the collection of information; search data sources; complete and review the collection of information; and, transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques to Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822), 1200 Pennsylvania Ave., NW, Washington, DC 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.

This form must be completed by all owners or operators of Class I, II, and III injection wells and others who may be directed to apply for permit by the Director.

- EPA l.D. NUMBER Fill in your EPA Identification Number. If you do not have a number, leave blank.
- OWNER NAME AND ADDRESS Name of well, well field or company and address.
- III. OPERATOR NAME AND ADDRESS Name and address of operator of well or well field.
- IV. COMMERCIAL FACILITY Mark the appropriate box to indicate the type of facility.
- V. OWNERSHIP Mark the appropriate box to indicate the type of ownership.
- VI. LEGAL CONTACT Mark the appropriate box.
- VII. SIC CODES List at least one and no more than four Standard Industrial Classification (SIC) Codes that best describe the nature of the business in order of priority.
- VIII. WELL STATUS Mark Box A if the well(s) were operating as injection wells on the effective date of the UIC Program for the State. Mark Box B if wells(s) existed on the effective date of the UIC Program for the State but were not utilized for injection. Box C should be marked if the application is for an underground injection project not constructed or not completed by the effective date of the UIC Program for the State.
- IX. TYPE OF PERMIT Mark "Individual" or "Area" to indicate the type of permit desired. Note that area permits are at the discretion of the Director and that wells covered by an area permit must be at one site, under the control of one person and do not inject hazardous waste. If an area permit is requested the number of wells to be included in the permit must be specified and the wells described and identified by location. If the area has a commonly used name, such as the "Jay Field," submit the name in the space provided. In the case of a project or field which crosses State lines, it may be possible to consider an area permit if EPA has jurisdiction in both States. Each such case will be considered individually, if the owner/operator elects to seek an area permit.
- X. CLASS AND TYPE OF WELL Enter in these two positions the Class and type of injection well for which a permit is requested. Use the most pertinent code selected from the list on the reverse side of the application. When selecting type X please explain in the space provided.
- XI. LOCATION OF WELL Enter the latitude and longitude of the existing or proposed well expressed in degrees, minutes, and seconds or the location by township, and range, and section, as required by 40 CFR Part 146. If an area permit is being requested, give the latitude and longitude of the approximate center of the area.
- XII. INDIAN LANDS Place an "X" in the box if any part of the facility is located on Indian lands.
- XIII. ATTACHMENTS Note that information requirements vary depending on the injection well class and status. Attachments for Class I, II, III are described on pages 4 and 5 of this document and listed by Class on page 2. Place EPA ID number in the upper right hand corner of each page of the Attachments.
- XIV. CERTIFICATION All permit applications (except Class II) must be signed by a responsible corporate officer for a corporation, by a general partner for a partnership, by the proprietor of a sole proprietorship, and by a principal executive or ranking elected official for a public agency. For Class II, the person described above should sign, or a representative duly authorized in writing.

EPA Form 7520-6 Page 3 of 6

#### **INSTRUCTIONS - Attachments**

Attachments to be submitted with permit application for Class I, II, III and other wells.

- A. AREA OF REVIEW METHODS Give the methods and, if appropriate, the calculations used to determine the size of the area of review (fixed radius or equation). The area of review shall be a fixed radius of 1/4 mile from the well bore unless the use of an equation is approved in advance by the Director.
- B. MAPS OF WELL/AREA AND AREA OF REVIEW Submit a topographic map, extending one mile beyond the property boundaries, showing the injection well(s) or project area for which a permit is sought and the applicable area of review. The map must show all intake and discharge structures and all hazardous waste treatment, storage, or disposal facilities. If the application is for an area permit, the map should show the distribution manifold (ifapplicable) applying injection fluid to all wells in the area, including all system monitoring points. Within the area of review, the map must show the following:

#### Class I

The number, or name, and location of all producing wells, injection wells, abandoned wells, dryholes, surface bodies of water, springs, mines (surface and subsurface), quarries, and other pertinent surface features, including residences and roads, and faults, if known or suspected. In addition, the map must identify those wells, springs, other surface water bodies, and drinking water wells located within one quarter mile of the facility property boundary. Only information of public record is required to be included in this map;

#### Class II

In addition to requirements for Class I, include pertinent information known to the applicant. This requirement does not apply to existing Class II wells;

#### Class III

In addition to requirements for Class I, include public water systems and pertinent information known to the applicant.

CORRECTIVE ACTION PLAN AND WELL DATA - Submit a tabulation of data reasonably available from public records or otherwise known to the applicant on all wells within the area of review, including those on the map required in B, which penetrate the proposed injection zone. Such data shall include the following:

#### Class I

Adescription of each well's types, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require. In the case of new injection wells, include the corrective action proposed to be taken by the applicant under 40 CFR 144.55.

#### Class II

In addition to requirement for Class I, in the case of Class II wells operating over the fracture pressure of the injection formation, all known wells within the area of review which penetrate formations affected by the increase in pressure. This requirement does not apply to existing Class II wells.

#### Class III

In addition to requirements for Class I, the corrective action proposed under 40 CFR 144.55 for all Class III wells.

D. MAPS AND CROSS SECTION OF USDWs - Submit maps and cross sections indicating the vertical limits of all underground sources of drinking water within the area of review (both vertical and lateral limits for Class I), their position relative to the injection formation and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection. (Does not apply to Class II wells.)

EPA Form 7520-6 Page 4 of 6

- E. NAME AND DEPTH OF USE (CLASS II) For Class II wells, submit geol name, and depth to bottom of all underground sources of drinking water which may be affected by the injection.
- F. MAPS AND CROSS SECTIONS OF GEOLOGIC STRUCTURE OF AREA Submit maps and cross sections detailing the geologic structure of the local area (including the lithology of injection and confining intervals) and generalized maps and cross sections illustrating the regional geologic setting. (Does not apply to Class II wells.)
- G. GEOLOGICAL DATA ON INJECTION AND CONFINING ZONES (Class II) For Class II wells, submit appropriate geological data on the injection zone and confining zones including lithologic description, geological name, thickness, depth and fracture pressure.
- H. OPERATING DATA Submit the following proposed operating data for each well (including all those to be covered by area permits): (1) average and maximum daily rate and volume of the fluids to be injected; (2) average and maximum injection pressure; (3) nature of annulus fluid; (4) for Class I wells, source and analysis of the chemical, physical, radiological and biological characteristics, including density and corrosiveness, of injection fluids; (5) for Class II wells, source and analysis of the physical and chemical characteristics of the injection fluid; (6) for Class III wells, a qualitative analysis and ranges in concentrations of all constituents of injected fluids. If the information is proprietary, maximum concentrations only may be submitted, but all records must be retained.
- FORMATION TESTING PROGRAM Describe the proposed formation testing program. For Class I wells the program must be designed to obtain data on fluid pressure, temperature, fracture pressure, other physical, chemical, and radiological characteristics of the injection matrix and physical and chemical characteristics of the formation fluids.

For Class II wells the testing program must be designed to obtain data on fluid pressure, estimated fracture pressure, physical and chemical characteristics of the injection zone. (Does not apply to existing Class II wells or projects.)

For Class III wells the testing must be designed to obtain data on fluid pressure, fracture pressure, and physical and chemical characteristics of the formation fluids if the formation is naturally water bearing. Only fracture pressure is required if the program formation is not water bearing. (Does not apply to existing Class III wells or projects.)

- J. STIMULATION PROGRAM Outline any proposed stimulation program.
- K. INJECTION PROCEDURES Describe the proposed injection procedures including pump, surge, tank, etc.
- L. CONSTRUCTION PROCEDURES Discuss the construction procedures (according to §146.12 for Class I, §146.22 for Class II, and §146.32 for Class III) to be utilized. This should include details of the casing and cementing program, logging procedures, deviation checks, and the drilling, testing and coring program, and proposed annulus fluid. (Request and submission of justifying data must be made to use an alternative to packer for Class I.)
- M. CONSTRUCTION DETAILS Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well.
- N. CHANGES IN INJECTED FLUID Discuss expected changes in pressure, native fluid displacement, and direction of movement of injection fluid. (Class III wells only.)
- O. PLANS FOR WELL FAILURES Outline contingency plans (proposed plans, if any, for Class II) to cope with all shut-ins or wells failures, so as to prevent migration of fluids into any USDW.
- P. MONITORING PROGRAM Discuss the planned monitoring program. This should be thorough, including maps showing the number and location of monitoring wells as appropriate and discussion of monitoring devices, sampling frequency, and parameters measured. If a manifold monitoring program is utilized, pursuant to §146.23(b)(5), describe the program and compare it to individual well monitoring.
- Q. PLUGGING AND ABANDONMENT PLAN Submit a plan for plugging and abandonment of the well including: (1) describe the type, number, and placement (including the elevation of the top and bottom) of plugs to be used; (2) describe the type, grade, and quantity of cement to be used; and (3) describe the method to be used to place plugs, including the method used to place the well in a state of static equilibrium prior to placement of the plugs. Also for a Class III well that underlies or is in an exempted aquifer, demonstrate adequate protection of USDWs. Submit this information on EPA Form 7520-14, Plugging and Abandonment Plan.

EPA Form 7520-6 Page 5 of 6

- R. NECESSARY RESOURCES mit evidence such as a surety bond or financ tatement to verify that the resources necessary to close, plug or abandon the well are available.
- S. AQUIFER EXEMPTIONS If an aquifer exemption is requested, submit data necessary to demonstrate that the aquifer meets the following criteria: (1) does not serve as a source of drinking water; (2) cannot now and will not in the future serve as a source of drinking water; and (3) the TDS content of the ground water is more than 3,000 and less than 10,000 mg/l and is not reasonably expected to supply a public water system. Data to demonstrate that the aquifer is expected to be mineral or hydrocarbon production, such as general description of the mining zone, analysis of the amenability of the mining zone to the proposed method, and time table for proposed development must also be included. For additional information on aquifer exemptions, see 40 CFR Sections 144.7 and 146.04.
- T. EXISTING EPA PERMITS List program and permit number of any existing EPA permits, for example, NPDES, PSD, RCRA, etc.
- U. DESCRIPTION OF BUSINESS Give a brief description of the nature of the business.

EPA Form 7520-6 Page 6 of 6

# West Bay 22 SWD EPA Permit Attachments and Appendices 4/20/11 Attachment A

# Area of Review Methods:

The area of review is a fixed radius of ¼ mile from the well bore.

#### Attachment B

#### Maps of Wells/Area and Area of Review:

Attached is a topographic map that extends at least 1 mile beyond the proposed injection well. Shown are the following: the injection well, the ¼ mile radius of review, all producing wells, injection wells, abandoned wells, surface bodies of water, springs and other pertinent surface features. The map also shows residences and roads. There are five residences within the area of review, and each has a fresh water well. However, not all of the fresh water wells have records available in the public record (a copy of the available records has been included in Appendix 4). Also, it is planned to drill a temporary fresh water well for water supply for drilling in the vicinity of the proposed injection well. No faults are known to exist or suspected in the area of review. The

following is a list of the wells within the area of review and their type:

Мар	Well Name	Surface	Date	State	Operator	Total	Status
Ref.		Location	Drilled	PN		Depth	:
59996	West Bay	NW/SE/SW	1/2010	59996	West Bay	4,370'	Producing
	1-22	Sec. 22			Exploration	,	Oil Well
		T4S R2E			Company		
60010	West Bay and	SW/SE/SW	2/2010	60010	West Bay	4,845'	Producing
	Boyd 1-27	Sec. 22			Exploration		Oil Well
		T4S R2E			Company		
60011	West Bay and	SW/SE/SW	3/2010	60011	West Bay	4,495'	Dry Hole
	Boyd 2-27	Sec. 22			Exploration		
		T4S R2E			Company		
60094	West Bay and	SW/SE/SW	5/2010	60094	West Bay	5,102	Producing
	Boyd 2-27	Sec. 22			Exploration		Oil Well
	HD1	T4S R2E			Company		

All of these wells penetrate the injection zone (only three penetrations due to the directional geometries of the wells) and have been cased and cemented across the injection zone. There are no known springs within the area of review. There are 5 seasonally-wet, marshy areas shown on the map as surface bodies of water.

#### Attachment C

#### Corrective Action Plan and Well Data:

Should upward fluid migration occur through the well bore of any previously unknown, improperly plugged or unplugged well due to injection of permitted fluids, injection will

# West Bay 22 SWD EPA Permit Attachments and Appendices 4/20/11

be shut-in until proper plugging can be accomplished. The UIC branch of the EPA will be notified immediately. Should any problems develop in the casing of the injection well, injection will be shut-in until such repairs can be made to remedy the situation. Operations shall not be resumed until the Director gives approval in writing.

Attached are copies of the well completion reports for all wells within the area of review. (See Appendix A)

#### Attachment D

#### Maps and Cross Sections of USDW's:

Does not apply to Class II wells.

#### Attachment E

### Name and Depth of USDW's:

The following are the USDW's in the area of the subject permit. This information was gathered from public well records, as well as the publication 'Hydrogeology for Underground Injection Control in Michigan: Part 1' and the Michigan Hydrogeologic Atlas (Plate 24), both published by the Department of Geology, College of Arts and Sciences, Western Michigan University, Kalamazoo, Michigan, 1981. The depth to the base of the lowermost USDW was determined by mapping the existing well control in the area. Attached is a map showing the subsea depth of the base of lowest USDW in this area.

Name of USDW	Measured Top of USDW	Measured Base of USDW
Glacial Drift	Surface	155′
Marshall Sandstone	155′	226′

#### Attachment F

#### Maps and Cross Sections of Geologic Structure of Area:

Does not apply to Class II injection wells.

#### Attachment G

### Geologic Data on Injection and Confining Zones:

Upper Confining Zone:

Name:

Salina A2 Evaporite

Depth:

2,634'-2,662'

# West Bay 22 SWD

# **EPA Permit Attachments and Appendices 4/20/11**

Thickness:

28 feet

Lithologic Description:

Anhydrite, dense, hard, white, excellent barrier to

flow.

Injection Zone:

Name:

Salina A1/Niagaran

Depth:

2,662'-3,032'

Thickness:

370 feet

Lithologic Description:

Dolomite, hard, sucrosic, vuggular, porous and

permeable, brown and grey.

Lower Confining Zone:

Name:

Clinton Shale

Depth:

3,032'-3,152'

Thickness:

120 feet

Lithologic Description:

Shale and tight argillaceous limestone and

dolomite. Hard and dense. Excellent barrier to

flow.

#### Attachment H

# **Operating Data:**

Estimated maximum injection rate: 1200 bbl/day

Proposed maximum injection pressure:

Assumed frac gradient:

0.8 psi/ft

Specific Gravity of Fluid:

1.193 (fresh water = 1)

Upper Depth of Inj. Zone:

2,662 feet

 $P_{max} = \{[0.8 - (0.433)*(SG of Inj. Fluid + 0.05)]*Upper Depth of Inj. Zone\} - 14.7$ 

$$P_{\text{max}} = \{[0.8 - (0.433)*(1.193 + 0.05)]*2,662\} - 14.7$$

 $P_{max} = 682 psig$ 

#### Attachment I

#### Formation Testing Program:

No formation testing is planned for this well.

#### Attachment J

# West Bay 22 SWD EPA Permit Attachments and Appendices 4/20/11

## Stimulation Program:

A small acid job of about 3,000 gallons of 28% HCl acid will be used to stimulate the well and clean up any drilling damage.

#### Attachment K

## **Injection Procedures:**

Injection into the subject well will be from a tank, equipped with a dump valve. It is anticipated that the well will accept the estimated daily injection volume on a vacuum. However, if it becomes necessary to use a pump to dispose of fluids from the separator, an appropriately sized positive displacement pump will be installed. This pump will be equipped with a bypass downstream of the pump with a pressure relief valve that will be set to maintain an injection pressure below the maximum permitted injection pressure. This relief will be plumbed back into the tank and will be periodically tested to insure it is in good, working order.

#### Attachment L

## **Construction Procedures:**

It is proposed to drill the West Bay 22 SWD as a dedicated disposal well. Attached are the State of Michigan forms that will be filed to permit the drilling of this well. They show casing and cementing details for all the strings. After the well is drilled, it is planned to drill out the casing shoe, clean out to TD and stimulate it with about 3,000 gallons of 28% HCl acid to remove drilling damage and improve injectivity. No other stimulation is planned. A packer will be run to about 2,630' and set. Treated fluid will be circulated into the annulus between the 5-1/2" production casing and the 2-7/8" tubing to inhibit corrosion and scavenge oxygen.

#### Attachment M

# Construction Details:

Attached is a schematic showing the construction details of the well. The injection fluid will be sampled at the wellhead.

#### Attachment N

#### Changes in Injection Fluid:

Does not apply to Class II wells.

#### Attachment O

# West Bay 22 SWD EPA Permit Attachments and Appendices 4/20/11

## Plans for Well Failures:

Should any situation arise which would indicate a possible well failure, injection will be immediately discontinued and the source of the problem traced. If a loss of mechanical integrity occurs, the EPA will be immediately notified and plans to remediate the well will be prepared. Upon approval, the well will be repaired and a new, witnessed mechanical integrity test will be performed. Upon EPA approval, the well will then be placed back into service. A shut-in of the injection well will not pose a threat to USDW's, as long as mechanical integrity is maintained. Brine production from wells using this injection well will either be trucked in the interim or the wells will be shut-in until the well is placed back into service.

#### **Attachment P**

# **Monitoring Program:**

The monitoring program for this well will consist of compliance with the EPA permit requirements of filing monthly, quarterly and annual reports.

#### Attachment Q

# Plugging and Abandonment (P&A) Plan:

Attached is the plugging and abandonment plan for this well. Also attached is a detailed plugging cost estimate prepared by West Bay Exploration Company.

#### Attachment R

#### **Necessary Resources:**

Attached is information to verify that the financial resources are available to close, plug and abandon the well.

#### Attachment S

#### Aquifer Exemption:

An aquifer exemption is not being requested for this injection well.

#### Attachment T

#### **Existing EPA Permits:**

# West Bay 22 SWD EPA Permit Attachments and Appendices 4/20/11

West Bay Exploration has the following other existing EPA permits:

Well Name	EPA Permit Number	State Permit Number	Location	Township	County
Neeley 1-22	MI-025-25-2D-0037	39700	NW/SW/SE 22 1S 5W	Lee	Calhoun
Tel B2-25	MI-101-2D-C030	47875	NW/SE/NW 25 23N 15W	Bear Lake	Manistee

# Attachment U

# **Description of Business:**

West Bay Exploration Company is involved in the exploration, production and marketing of crude oil and natural gas.

# West Bay 22 SWD EPA Permit Attachments and Appendices 4/20/11 Appendix 1

<u>Listing of Names and Addresses of Landowners Within the Area of Review:</u>

See attached list that contains the names and addresses of the landowners within the AOR.

#### Appendix 2

State Historic Preservation Office Notification:

See attached letter.

#### Appendix 3

State Coastal Zone Management Notification:

Jackson County does not border the Great Lakes and as such is not within a Coastal Zone Management Area.

### Appendix 4

Records of all State Drilling, Completion and/or Plugging Reports for all Wells Within the Area of Review:

All known State drilling, completion and plugging records of oil and gas wells and fresh water wells within the Area of Review have been attached.

# Appendix 5

<u>Physical and Chemical Characteristics and Description of the Source of the Injection</u> Fluid:

Attached is an analysis of brine similar to that which will be injected. This brine was collected from the Lantis 2-30, which is a well operated by West Bay Exploration Company in the Napoleon Field. The following is a list of wells that will use this disposal well, if approved:

Well Name	State Permit Number	Location	Field	County
ADAMS 1-21	60144	NW/NE/SE 21 4S 2E	Napoleon	JACKSON
BRADLEY ET AL 1-27	60088	SW/NE/SE/27 4S 2E	Napoleon	JACKSON
CANNING 1-15	60013	SW/SW/SE 15 4S 2E	Napoleon	JACKSON
COCHRANE 1-13A	60112	NE/NE/SE 13 3S 1E	Napoleon	JACKSON
COCHRANE 3-13	60089	SE/SW/NE 13 3S 1E	Napoleon	JACKSON
CURRIE ET AL 1-34	60143	NE/SE/NW 34 4S 2E	Napoleon	JACKSON

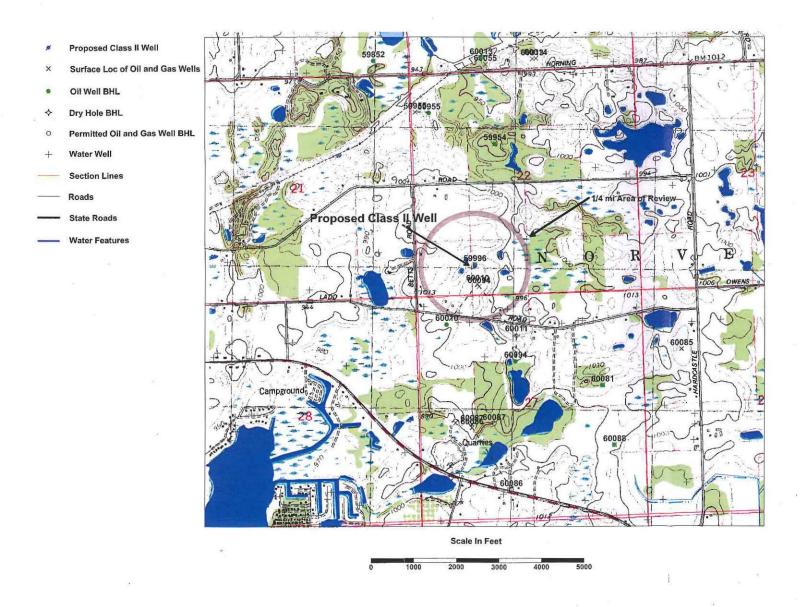
# West Bay 22 SWD EPA Permit Attachments and Appendices 4/20/11

			I'''	
CURTIS 1-32	60069	SE/SW/SE 32 3S 2E	Napoleon	JACKSON
CURTIS 1-5	60102	NE/SW/NE 5 4S 2E	Napoleon	JACKSON
DENSMORE 1-36	59269	SW/SE/SW/36 4S 3W	Napoleon	JACKSON
EIGHMEY 1-15	60014	SW/SW/SE 15 4S 2E	Napoleon	JACKSON
GOLOWIC 1-22	59955	SW/NW/NW 22 4S 2E	Napoleon	JACKSON
HARDCASTLE 1-26	60085	NE/SW/NW 26 4S 2E	Napoleon	JACKSON
HAUSER 1-32	59907	SE/SW/NE 32 3S 2E	Napoleon	JACKSON
HAYSTEAD 1-9A	60106	NE/NW/SW 9 4S 2E	Napoleon	JACKSON
HAYSTEAD 2-9	60077	NE/SE/NW 9 4S 2E	Napoleon	JACKSON
HAYSTEAD 3-9	60078	NE/NW/SW 9 4S 2E	Napoleon	JACKSON
HILDEN-ROVSEK ET AL 1-15	60053	SW/NE/SE 16 4S 2E	Napoleon	JACKSON
HILDEN-ROVSEK ET AL 1-16	59853	SW/NW/SE 16 4S 2E	Napoleon	JACKSON
HILDEN-ROVSEK ET AL 2-16	59852	SW/NW/SE 16 4S 2E	Napoleon	JACKSON
HILDEN-ROVSEK PART. 3-16	60049	SW/NE/SE 16 4S 2E	Napoleon	JACKSON
JENNINGS 1-32 HD1	59911	SW/SE/NW 32 3S 2E	Napoleon	JACKSON
LANTIS ET AL 1-29	59583	SE/NE/SE 30 3S 2E	Napoleon	JACKSON
LANTIS ET AL 2-30	60009	NW/NE/NE 30 3S 2E	Napoleon	JACKSON
LANTIS ET AL1-30	59893	SE/NE/SE 30 3S 2E	Napoleon	JACKSON
LENNOX TRUST ET AL 1-15	60055	SW/SE/SW 15 4S 2E	Napoleon	JACKSON
MORSE TRUST 1-16	60091	NW/SE/NW 16 4S 2E	Napoleon	JACKSON
NAPOLEON FARMS ET AL 1-4	60113	SE/SE/SE 5 4S 2E	Napoleon	JACKSON
NAPOLEON FARMS ET AL 1-5	60105	NE/SE/SE 5 4S 2E	Napoleon	JACKSON
RICHARDSON ET AL 1-30	59940	SW/NW/NE 30 3S 2E	Napoleon	JACKSON
SHELL 1-35	APPD FOR	SE/NW/NW 35 4S 2E	Napoleon	JACKSON
SWANK 1-22	59954	NW/SE/NW 22 4S 2E	Napoleon	JACKSON
WALBY 1-27	60087	NE/NW/SW 27 4S 2E	Napoleon	JACKSON
WALBY 2-27	60086	NE/NW/SW 27 4S 2E	Napoleon	JACKSON
WAROLIN ET AL 1-30	59939	SW/NW/NE 30 3S 2E	Napoleon	JACKSON
WEST BAY & BOYD 1-27	60010	SW/SE/SW 22 4S 2E	Napoleon	JACKSON
WEST BAY & BOYD 2-27 HD1	60094	SW/SE/SW 22 4S 2E	Napoleon	JACKSON
WEST BAY 1-22	59996	NW/SE/SW 22 4S 2E	Napoleon	JACKSON
WHALEN BYRON ET AL 1-16	60052	SW/NE/NE 16 4S 2E	Napoleon	JACKSON
WHALEN BYRON ET AL 2-16 HD1	APPD FOR	NW/SE/NE 16 4S 2E	Napoleon	JACKSON
WILSON 1-27	60081	SW/SE/NE 27 4S 2E	Napoleon	JACKSON

Plus other later wells in this area, if it becomes necessary to dispose of water from them. This field is currently undergoing development and additional wells may be added to fully develop the field.

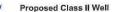
# Attachment "L"

# West Bay Exploration Compa. y Locator Map for West Bay 22 SWD Attachment B

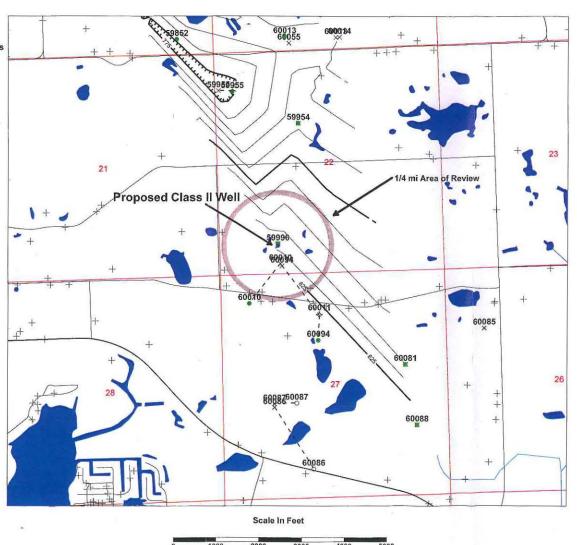


# West Bay Exploration Compa.y

# Attachment E Subsea Top of Base of USDW



- × Surface Loc of Oil and Gas Wells
- Oil Well BHL
- ♦ Dry Hole BHL
- Permitted Oil and Gas Well BHL
- + Water Well
- Section Lines
- Roads
- State Roads
- --- Water Features



		IGAN DEPAR					JEUGICAL		·		
APPL	ICATION F	OR PERI	W., TO:	1a. Part 615 S		/elis  r-	Part 625 M		_	ee enc	losed
	.L 🔲 DEEI	PEN 🗆 C	CONVERT	Oil and Gas		ļ <u>Ļ</u>	Waste Disp		⊠Y		
	ND OPERA			<del> </del>	Brine Disposal			ection		o, revis	ion of
	Part 615 or Part 625			Hydrocarbo		<u> </u> _	Processed	brine dispo	sal  appli	cation	
	omission and/or fals			Injection fo	r Secondary	<u> </u>	Storage			o, leg d	of horz
	nay result in fines ar			Recovery		L	Test, fee so			drainho	
2. List all previ	ous permit numb	ers	l l	D. No. (do not u	ıse SSN)	L	ocate well an	d outline dri		n sectio	on plat
			38-234	18162					SECTION 22, T4S,	R2E	
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Blanket .		On file	08784181		250,000	)				I I	
	ame of permittee		<u> </u>				RZE		¥	<u> </u>	. H28
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West Bay Exp	Dioration Com	рану		D			NOT S4		is L	1	30N.2
	Minat Day Oh	our Duties		Phone			D36	WATERMAN RD.	E-W 1/4 U	NE NE	385
	West Bay Sho	ne Drive		(231) 946			Ŗ	1	:		H)
Suite 200					DEQ 4 addition		isa.	59		la Pa	·· 🖺
Traverse City	, MI 49684			1	his application	h.	99	ر الر	—PROPERTY BOUNDARY		
					res No		BETTIS				
10. Lease or we	Il name (be as b	rief as possibl	e)	Well num			1407'	212'		ļ	
West Bay				22 SWI	)			998	South Line, Sec	10N 12 T4S	ROF :
11. Surface owr	ner		<u></u>						30001 ENE. 300	IKN 22, 113,	<u></u>
	ploration Com	nany						LAD (AD	P RO.		
12. Surface loca		parry		<u>.</u>		Town	shin		County		-
NW 1/4		1/4 of S	W 1/4 of Sec	22 T4S	R2E	Non			Jackso	ın	
13. If directiona			174 01 000			Town			County	41	
· ·	of	1/4 of	1/4 of Sec	т	R	1011	iomp		County		
14. The surface			174 01 000								
665			S continu	n lina Al	ND 1407	fact from	(E/	M M.		tion line	
Berraman		earest (N/S)					n nearest (E/	VV) <u>VV</u>	Sec.	tion line	;
15. Is this a dire				te line15. The b				A.D.		tion line	
			section		ND	reet from	n nearest (E/	vv)	sec	tion line	!
16. The bottom	-	_	or directional) of t								
			drilling		ND					ing unit	line
17. Kind of tools			18. Is sour oil or g	· — ·	•	1	of lowest kno				
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20. Intended tot	al depth		21. Formation at t		22. Producing			23. Objectiv	e pool, fi	eld, or p	oroject
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24.		PROPOS	ED DRILLING, C.	ASING AND CE	MENTING AN	ID SEALIN	G PROGRA	,			
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Depth (MD)	Geol. Formation	n Bit Dia	OD Size	Wt/Ft Grade		Denth /M	D) Carles			14	
				11011 01000	CONTRICTOR			TOC	1 $M$ $M$ $M$ $M$	\A/t	
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	Shales	14 ¾	<del></del>	42#/ft H-4	I0 New	350'	335	Surf	12	8.4	50+
900'	Coldwater S	sh 10.5/8	8" 8 5/8"	24#/ft J-5	10 New 5 New	350' 900'	335 215	Surf Surf	12 12	<b>!</b> ——	_
		sh 10.5/8	8" 8 5/8"		10 New 5 New	350'	335 215	Surf	12	8.4	50+
900'	Coldwater S	sh 10.5/8	8" 8 5/8"	24#/ft J-5	10 New 5 New	350' 900'	335 215	Surf Surf	12 12	8.4 8.5	50+ 40+
900'	Coldwater S	sh 10.5/8	8" 8 5/8"	24#/ft J-5	10 New 5 New	350' 900'	335 215	Surf Surf	12 12	8.4 8.5	50+ 40+
900'	Coldwater S	sh 10.5/8	8" 8 5/8"	24#/ft J-5	10 New 5 New	350' 900'	335 215	Surf Surf	12 12	8.4 8.5	50+ 40+
900'	Coldwater S G-Unit/C-Sh	6h 10 5/8 ale 7 7/8	8' 8 5/8" " 5 ½'	24#/ft J-5 15.5#/ft J-	10 New 5 New 55 New	350' 900' 2680'	335 215 425	Surf Surf Surf	12 12 24	8.4 8.5 9.7	50+ 40+ 28+
900' 2680' 25. DETAIL CEM	Coldwater S G-Unit/C-Sh	Sh 10 5/8 ale 7 7/8	8 5/8" " 5 ½'	24#/ft J-5 15.5#/ft J-	10 New 15 New 15 New 155 New	350' 900' 2680'	335 215 425	Surf Surf Surf	12 12 24	8.4 8.5 9.7	50+ 40+ 28+
900' 2680'  25. DETAIL CEN	Coldwater S G-Unit/C-Shi IENTING PROG 3 cu ft-335 sx	Sh 10 5/8 ale 7 7/8 RAM. IDENT	8 5/8" " 5 ½'  IFY ALL CEMENT /2% CaCl, (1.1	24#/ft J-5 15.5#/ft J- r classes, ad 8 yield) ceme	New	350' 900' 2680'	335 215 425 ES (IN CU. F1	Surf Surf Surf	12 12 24 CH CASII	8.4 8.5 9.7	50+ 40+ 28+
900' 2680'  25. DETAIL CEN	Coldwater S G-Unit/C-Shi IENTING PROG 3 cu ft-335 sx	Sh 10 5/8 ale 7 7/8 RAM. IDENT	8 5/8" " 5 ½'	24#/ft J-5 15.5#/ft J- r classes, ad 8 yield) ceme	New	350' 900' 2680'	335 215 425 ES (IN CU. F1	Surf Surf Surf	12 12 24 CH CASII	8.4 8.5 9.7	50+ 40+ 28+
900' 2680'  25. DETAIL CEM Surface AV=15 Intermediate AV	Coldwater S G-Unit/C-Sh  MENTING PROG 3 cu ft-335 sx  =238 cu ft- 50	RAM. IDENT Class A w	8 5/8" 5 ½  SFY ALL CEMENT 2% CaCl, (1.1 POZ w/2% Ca	24#/ft J-5 15.5#/ft J- r classes, ad 8 yield) ceme Cl2, (1.56 yie	10 New 15 New 15 New DITIVES, AND Port to surf Id), Tail 165	350' 900' 2680' VOLUME	335 215 425 ES (IN CU. FT	Surf Surf Surf Surf	12 12 24 CH CASII	8.4 8.5 9.7 NG STF	50+ 40+ 28+ RING.
900' 2680'  25. DETAIL CEN Surface AV=15 Intermediate AV Production/Inject	Coldwater S G-Unit/C-Sha  MENTING PROG 3 cu ft-335 sx  =238 cu ft- 50  ion AV=568 cu	RAM. IDENT Class A w 0 sx 50/50 Ift- Lead-2	8 5/8" " 5 ½'  IFY ALL CEMENT /2% CaCl, (1.1	24#/ft J-5 15.5#/ft J- r classes, ad 8 yield) ceme Cl2, (1.56 yie	10 New 15 New 15 New DITIVES, AND Port to surf Id), Tail 165	350' 900' 2680' VOLUME	335 215 425 ES (IN CU. FT	Surf Surf Surf Surf	12 12 24 CH CASII	8.4 8.5 9.7 NG STF	50+ 40+ 28+ RING.
900' 2680'  25. DETAIL CEN Surface AV=15 Intermediate AV Production/Inject 26. Send corres	Coldwater S G-Unit/C-Sha  MENTING PROG 3 cu ft-335 sx  =238 cu ft- 50  ion AV=568 cu  pondence and po	RAM. IDENT Class A w 0 sx 50/50 I ft- Lead-2	8 5/8" 5 ½  SFY ALL CEMENT 2% CaCl, (1.1 POZ w/2% Ca	24#/ft J-5 15.5#/ft J- r classes, ad 8 yield) ceme Cl2, (1.56 yie	New New Note: Ne	350' 900' 2680' VOLUME 5 sx Class d), 200 s	335 215 425 ES (IN CU. F1 s A w/2% (	Surf Surf Surf Surf	12 12 24 CH CASII	8.4 8.5 9.7 NG STF	50+ 40+ 28+ RING.
25. DETAIL CEM Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Bar	G-Unit/C-Shi MENTING PROG 3 cu ft-335 sx =238 cu ft-50 ion AV=568 cu pondence and program of the properties of the prope	RAM. IDENT Class A w 0 sx 50/50 I ft- Lead-2 ermit to ompany	8 5/8" 5 ½  IFY ALL CEMENT /2% CaCl, (1.1 POZ w/2% Ca 25 Sx 50/50 Po	24#/ft J-5 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% Ca0	New New Note: Ne	350' 900' 2680' VOLUME 5 sx Class d), 200 s	335 215 425 ES (IN CU. F1 s A w/2% ( x CIA (1.18	Surf Surf Surf Surf CaCl-Cen Syield) Ca	12 12 24 CH CASII	8.4 8.5 9.7 NG STF	50+ 40+ 28+ RING.
25. DETAIL CEM Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Bar	G-Unit/C-Shi MENTING PROG 3 cu ft-335 sx =238 cu ft-50 ion AV=568 cu pondence and program of the properties of the prope	RAM. IDENT Class A w 0 sx 50/50 I ft- Lead-2 ermit to ompany	8 5/8" 5 ½  SFY ALL CEMENT 2% CaCl, (1.1 POZ w/2% Ca	24#/ft J-5 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% Ca0	New New Note: Ne	350' 900' 2680' VOLUME 5 sx Class d), 200 s	335 215 425 ES (IN CU. F1 s A w/2% ( x CIA (1.18	Surf Surf Surf Surf	12 12 24 CH CASII	8.4 8.5 9.7 NG STF	50+ 40+ 28+ RING.
25. DETAIL CEM Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Ba Address 13685 CERTIFICATION	Coldwater S G-Unit/C-Shi  MENTING PROG 3 cu ft-335 sx =238 cu ft- 50 ion AV=568 cu pondence and pr y Exploration C South West Ba I "I state that I ai	RAM. IDENT Class A w. 0 sx 50/50 Ift- Lead-2 ermit to ompany y Shore Drive	8" 8 5/8" " 5 ½'  IFY ALL CEMENT/2% CaCl, (1.1 POZ w/2% Ca 25 Sx 50/50 Powe, Suite 200, Tr	24#/ft J-5 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% CaC	DITIVES, AND LET	350' 900' 2680' 20 VOLUME 5 sx Class d), 200 s	335 215 425 425 SS (IN CU. FT S A W/2% ( X CIA (1.18 Phone	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946- t 615 wells	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF	50+ 40+ 28+ RING.
25. DETAIL CEM Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Ba Address 13685 CERTIFICATION application was p	Coldwater S G-Unit/C-Shi  MENTING PROG 3 cu ft-335 sx =238 cu ft- 50 ion AV=568 cu pondence and pr y Exploration C South West Ba I "I state that I arepared under m	RAM. IDENT Class A w. 0 sx 50/50 uft- Lead-2 ermit to ompany y Shore Driver m authorized by supervision	8" 8 5/8" " 5 ½'  SFY ALL CEMENT/2% CaCl, (1.1 POZ w/2% Ca 25 Sx 50/50 Powe, Suite 200, Transport to the said applicant, and direction. The	24#/ft J-5 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% CaC	DITIVES, AND LE-mail annion 49684  Enclose permanaste dispose	350' 900' 2680' VOLUME 5 sx Class d), 200 s @wbeco.n	335 215 425 425 SS (IN CU. FT SS A W/2% ( X CIA (1.18 Phone 800 for all Par 8500 for a brir	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946 t 615 wells be production	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF Surf o Surf	50+ 40+ 28+ RING.
25. DETAIL CEMSurface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Ba Address 13685 CERTIFICATION application was pherein are true, a	Coldwater S G-Unit/C-Shi  MENTING PROG 3 cu ft-335 sx =238 cu ft- 50 ion AV=568 cu ion	RAM. IDENT Class A w. 0 sx 50/50 uft-Lead-2 ermit to company ny Shore Driven authorized by supervision uplete to the b	B" 8 5/8" " 5 ½'  STY ALL CEMENT/2% CaCI, (1.1 POZ w/2% Ca 25 Sx 50/50 Powe, Suite 200, Truby said applicant, and direction. The est of my knowled	24#/ft J-5 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% CaC	DITIVES, AND PART OF THE PART	350' 900' 2680' 2680'  O VOLUME  S SX Class d), 200 s  Owbeco.n	335 215 425 425 SS (IN CU. F1 S A W/2% ( x CIA (1.18 Phone 800 for all Par 8500 for a brill I. Make chec	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946 t 615 wells be production	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF Surf o Surf	50+ 40+ 28+ RING.
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25. DETAIL CEMSurface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Bay Address 13685 CERTIFICATION application was pherein are true, a 27. Application	Coldwater S G-Unit/C-Shi  MENTING PROG 3 cu ft-335 sx =238 cu ft- 50 ion AV=568 cu ion	RAM. IDENT Class A w. 0 sx 50/50 uft-Lead-2 ermit to company ny Shore Driven authorized by supervision uplete to the b	B" 8 5/8"  " 5 ½'  IFY ALL CEMENT /2% CaCl, (1.1 POZ w/2% Ca 25 Sx 50/50 Po  ve, Suite 200, Tr by said applicant, and direction. The est of my knowled Phone (231) 94  Date	24#/ft J-5 15.5#/ft J- 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% CaC raverse City, M This ne facts stated lge."	DITIVES, AND PART OF THE PART	350' 900' 2680' 2680'  O VOLUME  S SX Class d), 200 s  Owbeco.n	335 215 425 425 SS (IN CU. F1 S A W/2% ( X CIA (1.18 Phone 800 for all Par 8500 for a brill I. Make chec	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946 t 615 wells be production	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF Surf o Surf	50+ 40+ 28+ RING.
900' 2680'  25. DETAIL CEN Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Ba Address 13685 CERTIFICATION application was pherein are true, a 27. Application Ann M Baker	Coldwater S G-Unit/C-Shi  MENTING PROG 3 cu ft-335 sx =238 cu ft- 50 ion AV=568 cu ion	RAM. IDENT Class A w. 0 sx 50/50 uft-Lead-2 ermit to company ny Shore Driven authorized by supervision uplete to the b	B" 8 5/8"  " 5 ½'  IFY ALL CEMENT /2% CaCl, (1.1 POZ w/2% Ca 25 Sx 50/50 Po  ve, Suite 200, Tr by said applicant, and direction. The est of my knowled Phone (231) 94	24#/ft J-5 15.5#/ft J- 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% CaC raverse City, M This ne facts stated lge."	DITIVES, AND PART OF THE PART	350' 900' 2680' 2680'  O VOLUME  S SX Class d), 200 s  Owbeco.n	335 215 425 425 SS (IN CU. F1 S A W/2% ( X CIA (1.18 Phone 800 for all Par 8500 for a brill I. Make chec	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946 t 615 wells be production	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF Surf o Surf	50+ 40+ 28+ RING.
900' 2680'  25. DETAIL CEN Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Ba Address 13685 CERTIFICATION application was pherein are true, a 27. Application Ann M Baker	Coldwater S G-Unit/C-Sha  MENTING PROG 3 cu ft-335 sx =238 cu ft-50 ion AV=568 cu pondence and pr y Exploration C South West Ba  I state that I are prepared under maccurate and comprepared by (prin	RAM. IDENT Class A w. Sx 50/50 Ift- Lead-2 ermit to company by Shore Driv m authorized by supervision plete to the b t or type)	8" 8 5/8" " 5 ½'  STY ALL CEMENT/2% CaCI, (1.1 POZ w/2% Ca 25 Sx 50/50 Po  We, Suite 200, Tr by said applicant, and direction. The est of my knowled Phone (231) 94  Date 4/18/11	24#/ft J-5 15.5#/ft J- 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% CaC raverse City, M This ne facts stated lge."	DITIVES, AND PART OF THE PART	350' 900' 2680' 2680'  O VOLUME  S SX Class d), 200 s  Owbeco.n	335 215 425 425 SS (IN CU. F1 S A W/2% ( X CIA (1.18 Phone 800 for all Par 8500 for a brill I. Make chec	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946 t 615 wells be production	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF Surf o Surf	50+ 40+ 28+ RING.
900' 2680'  25. DETAIL CEM Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Ba Address 13685 CERTIFICATION application was pherein are true, a 27. Application Ann M Baker 28. Signature	Coldwater S G-Unit/C-Shi  MENTING PROG 3 cu ft-335 sx =238 cu ft- 50 ion AV=568 cu ion	RAM. IDENT Class A w. Sx 50/50 Ift-Lead-2 ermit to company by Shore Driv m authorized by supervision uplete to the b t or type) cological Surv	B" 8 5/8"  " 5 ½'  STY ALL CEMENT  /2% CaCl, (1.1  POZ w/2% Ca  25 Sx 50/50 Po  ve, Suite 200, Tr  by said applicant. and direction. The est of my knowled  Phone (231) 94  Date 4/18/11  ey Use Only	24#/ft J-5 15.5#/ft J- 15.5#/ft J- 7 CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% Cat raverse City, M This he facts stated lige."	DITIVES, AND PART OF THE PART	350' 900' 2680' 2680'  O VOLUME  S SX Class d), 200 s  Owbeco.n	335 215 425 425 SS (IN CU. F1 S A W/2% ( X CIA (1.18 Phone 800 for all Par 8500 for a brill I. Make chec	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946 t 615 wells be production	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF Surf o Surf	50+ 40+ 28+ RING.
900' 2680'  25. DETAIL CEN Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Ba Address 13685 CERTIFICATION application was pherein are true, a 27. Application Ann M Baker	Coldwater S G-Unit/C-Sha  MENTING PROG 3 cu ft-335 sx =238 cu ft-50 ion AV=568 cu pondence and pr y Exploration C South West Ba  I state that I are prepared under maccurate and comprepared by (prin	RAM. IDENT Class A w. Sx 50/50 Ift-Lead-2 ermit to company by Shore Driv m authorized by supervision uplete to the b t or type) cological Surv	8" 8 5/8" " 5 ½'  STY ALL CEMENT/2% CaCI, (1.1 POZ w/2% Ca 25 Sx 50/50 Po  We, Suite 200, Tr by said applicant, and direction. The est of my knowled Phone (231) 94  Date 4/18/11	24#/ft J-5 15.5#/ft J- 15.5#/ft J- T CLASSES, AD 8 yield) ceme Cl2, (1.56 yie OZ w/2% CaC raverse City, M This ne facts stated lge."	DITIVES, AND PART OF THE PART	350' 900' 2680' 2680'  O VOLUME  S SX Class d), 200 s  Owbeco.n	335 215 425 425 SS (IN CU. F1 S A W/2% ( X CIA (1.18 Phone 800 for all Par 8500 for a brill I. Make chec	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946 t 615 wells be production	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF Surf o Surf	50+ 40+ 28+ RING.
900' 2680'  25. DETAIL CEM Surface AV=15 Intermediate AV Production/Inject 26. Send corres Name West Ba Address 13685 CERTIFICATION application was pherein are true, a 27. Application Ann M Baker 28. Signature	G-Unit/C-Shi  G-Unit/C-Shi  G-Unit/C-Shi  MENTING PROG 3 cu ft-335 sx  =238 cu ft- 50  ion AV=568 cu  ion AV=56	RAM. IDENT Class A w. 0 sx 50/50 Ift- Lead-2 ermit to company by Shore Driv m authorized by supervision plete to the b t or type) Incological Survier	B" 8 5/8"  " 5 ½'  STY ALL CEMENT  /2% CaCl, (1.1  POZ w/2% Ca  25 Sx 50/50 Po  ve, Suite 200, Tr  by said applicant. and direction. The est of my knowled  Phone (231) 94  Date 4/18/11  ey Use Only	24#/ft J-5 15.5#/ft J- 15.5#/ft J- T CLASSES, AD 8 yield) ceme CI2, (1.56 yie OZ w/2% Cat Taverse City, M This ne facts stated lge."	DITIVES, AND Ent to surf Id), Tail 165 CI (1.56 yield I 49684 Enclose perm waste disposal, or s DEQ Cashier	350' 900' 2680' 2680'  O VOLUME  S SX Class d), 200 s  Owbeco.n	335 215 425 425 SS (IN CU. F1 S A W/2% ( X CIA (1.18 Phone 800 for all Par 8500 for a brill I. Make chec	Surf Surf Surf Surf Surf CaCl-Cen Syield) Co (231) 946 t 615 wells be production	12 12 24 CH CASII nent to Sement to	8.4 8.5 9.7 NG STF Surf o Surf	50+ 40+ 28+ RING.



13685 S. West Bay Shore / Suite 200 Traverse City, MI 49684 231-946-0200 / Fax: 231-946-8180 5555 N. Hogback Road Fowlerville, MI 48836 517-223-4011 / Fax: 517-223-4020

April 18, 2011

Permits and Bonding Unit Office of Geological Survey Oil and Gas Division PO Box 30256 Lansing, MI 18909-7756

RE:

West Bay 1-22 SWD

Enclosed, please find the materials necessary to apply for a permit to drill the West Bay #1-22 SWD. As West Bay Exploration is the landowner in the case of this well, there is no letter notifying the landowner in the permitting packet.

- 1. Application for Permit to Drill and Operate A Well (7200-1)
- 2. Survey Record of Well Location (7200-2)
- 3. Supplemental Plat Drawing
- 4. Wellhead Blowout Control System & Testing Procedures (7200-4)
- 5. Soil Erosion and Sedimentation Control Plan (7200-18)
- 6. Environmental Impact Assessment (7200-19)
- 7. Injection well data (7200-14) and required attachments
- 8. Letter to Jackson County Clerk's Office
- 9. Credit Card Transaction Authorization

If you have any questions regarding the above, please feel free to call us at 231-946-0200. Thanks so much.

Sincerely.

Anni Baker

Operations Office



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF COLOGICAL SURVEY

# SURVEY RECORD OF WELL LOCATION

This information is required by authority of Part 615

Applicant
West Bay Exploration Company
Well name and number
Most Pay 20 CMD

Supervisor of Wells, or Part 625 Mineral Wells, of Act 451 PA 1994, as amended, in order to obtain a drilling permit.		West Bay	22 SWD				
1a. Surface location			<u> </u>	Township	C	County	
NW 1/4 of SE 1/4 of SW 1/4 of section 22	r 4S	R 2E		Norvell	J	ackson	
1b. If this is a directional well, bottom hole location will be				Township	C	County	
1/4 of 1/4 of 1/4 of section	Т	R					
Instructions: Outline drilling unit for oil/gas wells (Part 615) or property the well in two directions from the nearest section, quarter section, and					oot well location	on plat showr	n. Locate
2. The surface location is							
665 ft. from nearest (N/S) S section line		PLAT B		PRESEN 1 MILE S	ITS ONE FUI QUARE)	LL SECTIC	N N T
1407 ft. from nearest (E/W) W section line and				HORNING	RD.		
1969 ft. from nearest (N/S) N quarter section line	F	<u> </u>	NO	<del>-</del>	ECTION 22, T4S,	R2E	
1212 ft. from nearest (E/W) E quarter section line							
1212 ft. from nearest (E/W) L quarter section line  3. Bottom hole will be (if directional)	-	;		-	: :		
		2E					R2E
ft. from nearest (N/S)section line		S, R2E		<u>.</u> 2	ļ		
ft. from nearest (E/W)section line	1 !	2, 74S,		, 4/			2, T4S,
and				<u>-</u> ن	-		N Z
ft. from nearest (N/S)quarter section line		SECTION 22,	NAVA TETO	2	<u> </u>		SECTION 22,
Ti. Hori fleatest (N/O)quarter section line	1 31		WATER	MAN RD.	E-W 1/4 L	NE :	
ft. from nearest (E/W)quarter section line	]	LINE,					LINE
4. Bottom hole will be (directional or straight)		WEST	Ö				EAST
ft. from nearest (N/S) drilling unit line		A	196		- PROPERTY		
	S RD.		A www.		— PROPERTY BOUNDARY		
ft. from nearest (E/W)drilling unit line  5. Show access to stake on plat and describe if it is not readily	BETTIS						į
accessible. Take M-50 to Horning/Case Road, go east		1407		1212'			
4.25 miles, go south on Hardcastle Road 1.15 miles, go			665				
west on Ladd Road 1.0 mile to gravel drive at House #12180, then go north on gravel drive 1300' to well site		<u> </u>			SOUTH LINE, SEC	TION 22, T45,	R2E
marked with double lath in field.							
	_		- Constant	LADO	RD.		
6. Zoning Residential, effective date Initial date of residential zoning							
Other Agricultural							
ON SEPARATE PLAT OR PLOT PLAN, LOCATE, IDENTIFY AND SE A. All roads, power lines, buildings, residences, fresh water wells,				ithin 600 foo	at of the stake		
B. All lakes, streams, wetlands, drainage-ways, floodplains, envir						and threaten	ed or
endangered species within 1320 feet of the stake.  C. All type I and IIa public water supply wells within 2000 feet and	i ali typ	e IIb and III pu	ıblic water su	pply wells w	vithin 800 feet of	the well stak	e.
Name of individual who surveyed site Stephen V. Vallier, P.S.	OTOLG	Company Company Company	y nore Const	ulting	Date of su 09/28/20		
Address	DE A	CYOPE I		<u> </u>	Phone		
2534 Black Creek Road, Muskegon, MI 49444	Stephe				231-777		
! CERTIFY THE ABOVE INFORMATION IS COMPLETE Signature of licensed surveyor (affix seal)		1 6	D THE BEST	OF MY KN	OWLEDGE AN Date	D BELIEF.	
	ROFESS SURVE				.3	117/11	
	PPJ 6	TION	ILL OR DEE	PEN		<del></del>	

OF ESSION PARTY



MICHIGAN DEPART**ENT OF ENVIRONMENTAL	QUALITY - OFFICE OF PSOLOGIC	AL SURVEY
SOIL EROSION & SEDI NTATION	1. Name and address c plicant	
CONTROL PLAN	West Bay Exploration Compa	nv
By authority of Part 91, and Part 615 or Part 625 of Act 451	13685 South West Bay Shore	-
PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.	Traverse City, MI 49684	, Billo, Galia 200
☑ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well	Phone: <u>(231) 946-0200</u> Fax:	(231) 946-8180
2. Well or project name:	3. Well or project location:	
West Bay 22 SWD	Section(s) 22	T4S R2E
Name and address of County or local Enforcement Agent (CEA)	5. Township	6. County
	Norvell	Jackson
Jackson County Health Department	7. Date earth changes expected to s	tart
1715 Lansing Avenue, Suite 221	Spring 2011	·
Jackson, MI 49202	8. Date of expected completion	
Phone: (517) 788-4420 Fax: (517) 788-4373	Summer 2011	
9. Name and address of person responsible for earth change:	10. Name and address of person res	ponsible for maintenance:
Tim Baker	Tim Baker	
West Bay Exploration Company	West Bay Exploration Compa	iny
4161 Legion Drive	4161 Legion Drive	
Mason, MI 48854	Mason, MI 48854	
Phone: (517) 676-5167 Fax: (517) 676-5224	Phone: <u>(517) 676-5167</u> Fax:	(517) 676-5224
11. Send copies of supplemental plat required by Part 615, R 324.201(2)(b)	or R 324.504(4), and this form and all	attachments, to CEA.
Date sent to CEA March 21, 2011		
EARTH CHANG	GE ACTIVITIES	
12. Project description: (Project activities may be permitted sequentially.)	No earth change activities - using e	existing drilling pad.
a. Number of well sites 1 - Existing pad , N/A acres	d. Flow line(s) trenched in off well sit	e*_N/Afeet,acres
b. Number of surface facility sites N/A ,acres	e. Flow line(s) plowed in off well site	<u>N/A</u> feet, acres
c. New access roads N/A feet,acres	*Contact CEA for fee schedule	
13. Describe sites for which permits are being sought under Part 301 (Inland	Lakes & Streams) None	
Describe sites for which permits are being sought under Part 303 (Wetla	inds) None	
List file numbers if known		
14 Areas requiring control structures		
Will earth changes occur in areas with slopes of 10% or greater; areas where run narrow valley bottoms, etc.; areas within 500' of a lake or stream; or other areas within 500' of a lake or stream; or other areas within 500' of a lake or stream;		
Yes Attach detail map at scale of 1"=200' or larger, with contour lines at Also indicate any of the following erosion control structures that will be u		, ,
Indicate on plan whether erosion control structures are temporary of		or detail plan.
☐ Diversions ☐ Culverts ☐ Sediment basins ☒ Silt fences ☐	·	Othor
No	_ hip-rap ZJ Bernis Check dams	
15. Site restoration		
	No topsoil on site	
☐ Recontour and revegetate as soon as weather permits. Seed mix	No topsoil on site	•
Describe other proposed methods of restoration		
	· · · · · · · · · · · · · · · · · · ·	
16. Application prepared by (name)	aturo /	, Date
1 1 1 1 1 1	400	3/17/11
Wade A. VandenBosch, P.E.	COAL ENEOGOBIO ACENT	3/17/4
FOR USE OF COUNTY OR L		with the control of Ordering
INSTRUCTIONS TO COUNTY OR LOCAL ENFORCMENT AGENT: Return Survey within 30 days of receipt. Explain reasons for recommendation or disrevisions to the plan.		
17. Comments		

☐ Inspected site with representative of applicant

Date\_

Date\_

18. Approved Disapproved

☐ Conducted on site inspection

CEA signature\_ EQP 7200-18 (rev. 8/2004)



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

#### AVIRONMENTAL IMPACT ASSESSI. AT

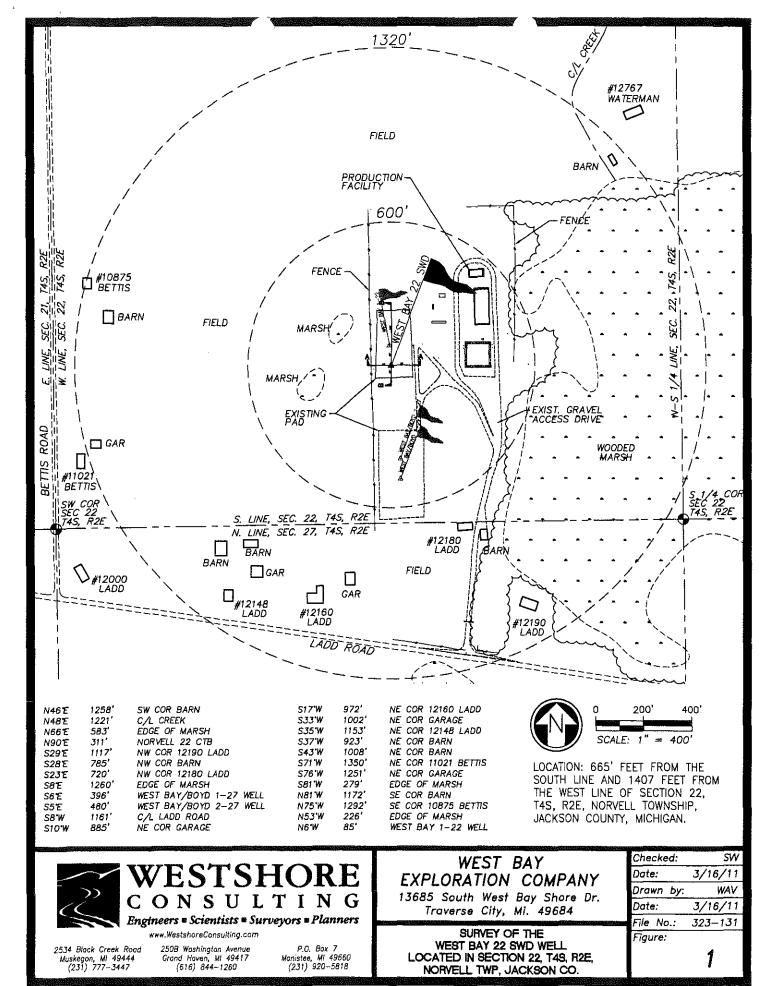
Required for issuance of well permit pursuant to Part 615, 1994 PA 451, as amended. Falsification of this information may result in fines and/or imprisonment. Check all boxes and fill in all blanks which apply to this drilling application. Attach additional pages as necessary.

#### A. DESCRIPTION OF PROJECT

Applicant's name     West Bay Exploration Company	Well name and numb West Bay 22 SWD	er Intended use of well Brine Disposal			
	Responsible Company West Bay 22 SWD  Il ownership, check each category of mineral owners in drilling unit or Antrim Un				
	al Dther, identi				
3. Applicable spacing order and drilling un					
☐ S.O. 14-9-94 N. Mich. Antrim, 80 acres		S.O. 3-3-95 S. Mich. Antrim, 40 acres			
S.O. 1-73 Niagaran, 80 acres		S.O. 2-81 Oakland Co. Niagaran, 40 acres			
R 324.301 General rule, 40 acres		S.O. 1-86 P.D.C., 640 acres			
⊠ Field Spacing or Unitization Order (identify Order #18-2007 applies	delow)				
Antrim USP (identify name, number of acre	es, and number of drilled	and permitted wells)			
		tions for applying for an administrative spacing exception			
Exception to spacing requested, petition for Non-producing well, no drilling unit	r nearing filed				
4. Applicant's right to drill and produce					
✓ Yes ☐ No Are all mineral interests in the	e drilling unit under lease	e and controlled by the applicant/permittee?			
		to obtain leases are attached (if allowed by spacing order)			
☐ Not applicable, no drilling unit.		, , , , , , , , , , , , , , , , , , ,			
Yes No Has applicant obtained all co					
If no, what additional approvals are neede	d?				
5. Special considerations					
		or Existing well pad			
Yes No Is well expected to encounter Yes No Is well located in a city, town:		oulation greater than 70 0002			
Other (describe)		· · · · · · · · · · · · · · · · · · ·			
	-				
	B. IMPACTS AS A RE	SULT OF DRILLING			
1. Access route dimensions	f4 00	took / 40 500			
Provide a detailed description of topography		feet / 43,560 =0.64 acres. rection and percentage of slopes, land cover and present land use			
for the access route while drilling. Identify rou		rection and percentage or slopes, land cover and present land use			
		e existing round surface is rolling land. The slope of the proposed access			
		area easterly of the access route. Specific soil types per the USDA Soil			
Survey are Gilford-Colwood Complex and Leoni g	ravelly-sandy loam. The ex	risting land is open field.			
2. Well site dimensions					
	feet x152	feet / 43,560 =0.99 acres.			
for the well site. Identify well site on attached		lirection and percentage of slopes, land cover and present land use			
		lrops an average of approximately 3% northerly across the pad with a low			
		towards a low wet area westerly of the well site. Specific soil types per			
the USDA Soil Survey are Leoni gravelly-sandy loa					
3. Is well site located in residentially zoned		or yes, H324.407(3) and H324.505 apply.  By exist on attached plat or project map. How will they be handled if			
they are encountered? .	n yes, rdentily where the	ey exist on attached plat or project map. How will they be handled in			
5. Identify the distance and direction to all					
		man-made features within 600' of the well site.			
		ell is located 396 feet south. The West Bay/Boyd 2-27 well is located 480			
reet south. The Norvell 22 CTB facility is located 3	i i ieet east. No other ma	n-made features exist within 600 feet of the proposed well.			
A AUT CONTRACTOR OF THE CONTRACTOR	malla militar access and	well site and all Time the and Time the section of			
		well site and all Type IIb and Type III public water wells within 800' ntified within the specified radii.			
o. t. o Holl Old - 110 Typo I, II of III public Hall	app., 110110 11010 100	The second second			
(Type I is a community water supply with year-round service		nts. Type II is a non-community water supply with ≥ 15 service connections or ≥ 25			

(Part B-5 continued) c. Surface waters, floodplains, wetlands, natural rivers, critical dune areas, threatened or endangered species within 1320' and Great Lake shorelines within 1500' of the well site.  There are two marshes approximately 226 and 279 feet west of the well site and a wooded marsh 583 feet east of the well site. There is a creek flowing northerly from the wooded marsh located 1221 feet northeast of the well site. Indiana Bat habitat may exist in the vicinity of the proposed well site, however, this project is unlikely to affect these species because no clearing of suitable bat habitat is anticipated.
d. Describe the actions to be taken to mitigate impacts to any of the items identified in Part B-5 a-c above.  The existing marsh/wetland features will be protected using earthen berms around the well site and strategic soil erosion and sedimentation control measures, such as geotextile silt fence and vegetation preservation outside the limits of the well site and access route. There is no anticipated tree removal or activity that would affect Indiana Bat habitat.
6. Identify the source of fresh water used to drill this well  □ "Permanent" water well, to be retained after final completion OR used for drinking water (shall be drilled and installed pursuant to Part 127 of 1979 PA 368, as amended)  □ "Temporary" water well, will be plugged upon final completion and not used for drinking water (consult R 324.403 (2) for minimum construction requirements)  □ Fresh water will be hauled from existing water well or municipal source (identify)  □ No fresh water will be used in drilling this well
7. Pit location and handling and disposal of drill cuttings, muds and fluids  Anticipated depth to groundwater 14' +/- Method determined by Geological interpretation  On site in-ground pit, anticipated dimensions: L 80' W 40' D 14'  Remote in-ground pit, anticipated dimensions: L W D Attach approval of landowner and attach survey of remote pit location  Well drilled below base of Detroit River Anhydrite. Describe how mud and cuttings pursuant to R324.407(7)(iv) will be handled. Pit fluids below DRA disposed by licensed liquid waste hauler OR Pit fluids below DRA disposed at the disposed at Inc. If drill cuttings & mud don't pass paint filter test, they will be disposed at Inc. Inc. Inc. Inc. Inc. Inc. Inc. Inc.
C. IMPACTS AS A RESULT OF PRODUCTION
1. Kind of well ☐ exploratory ☐ development ☒ Other (describe) Brine Disposal
Antrim project (submit separate project EIA, form EQP 7200-21, for access roads, flow lines, and surface facilities) where is project EIA found? and complete C-2, omit C-3 and C-4
2. Location of surface facilities (Prior to construction, the District Geologist, pursuant to R324.1002, must also approve all surface facility secondary containment plans.)  Greater than 300' from wellhead. Identify facility location on attached plat and complete C-3 and C-4.  Less than 300' from wellhead. Identify facility location on attached plat, complete C-3, omit C-4.  Surface facility exists or was previously approved for construction and is known as  complete C-3, omit C-4.  Surface facility location was not determined for this exploratory well (omit C-3 and C-4). Submit a separate request for Surface Facility Location Approval (form 7200-22), which includes a Facility Plan, Environmental Impact Assessment, and Soil Erosion and Sedimentation Control Plan, to District Geologist prior to construction pursuant to R324.504.
3. Flow Line Environmental Impact Assessment  Identify flow line location and course from well to the surface facility on attached plat.  Flow line route dimensions feet x feet / 43,560 = acres.  Describe the topography, drainage, soil type(s), direction and percentage of slopes, land cover and present land use along the flow line route
4. Surface Facility Environmental Impact Assessment  a. Dimensions of surface facilityfeet xfeet / 43,560 = acres.  b. Describe the topography, drainage, soil type(s), direction and percentage of slopes, land cover, and present land use  1. Along access route to surface facility

Part C-4, continued 2. At surface facility site	
<ul><li>applies.</li><li>d. Will surface facilities be located in residentially zoned area?</li><li>e. Identify the distance and direction to all of the following, and id</li></ul>	lentify on attached plat
Distance and direction to all buildings, fresh water wells, pub surface facility	olic roads, power lines and other man-made features within 600' of
2. Distance and direction to any surface waters, floodplains, we species within 1320' and Great Lakes shorelines within 1500' of t	etlands, natural rivers, critical dune areas, and threatened or endangered the surface facility site
3. Describe the actions to be taken to mitigate impacts to any o	of the items identified in Part C-4e 1 and 2 above.
4. Distance and direction to all Type I and Type IIa public water Type III wells within 800' of the surface facility	r supply wells within 2000' of the surface facility site and all Type IIb and
individuals for not less than 60 days per year. Average daily water production: IIA	25 residents. Type II is a non-community water supply with ≥ 15 service connections or ≥ 25 ≥ 20,000 GPD. IIB <20,000 GPD. Type III is a public water supply which is neither type I or II.
5. Method of brine disposal  ☐ Dedicated flow line to disposal well ☐ Transported by tanker. ☐ Other Injection well	, permit number
6. Method of transporting hydrocarbons past the point of sale  Oil sold through transmission line	
☐ Oil transported by tanker for sale ☐ Other Not Applicable — Brine Disposal Well	Gas sold through transmission line Gas flared on site (production restrictions may apply)
	ROM DRILLING AND/OR PRODUCTION
Describe additional measures to be taken to protect environmental	al and/or land use values
location of this well, it is not anticipated that there will be a negative	areas beyond the access route and pad location. Due to the remote ve impact on residents and land use values. The well site berm will a soil erosion plan will be followed. Hospital-type mufflers will be used to ents will be followed.
E. ADDITI	ONAL PERMITS
Identify additional permits to be sought None	
	ND SEDIMENTATION PLAN
in this application. (Refer to requirements under Part 91, 1994 PA	The state of the s
	SURFACE FACILITY LOCATIONS
Were alternate surface locations considered for this well or surface   No, alternate sites did not seem necessary or more desirable  Yes, the following locations were considered	
Why were they rejected in favor of the proposed location?	
H. CEF	RTIFICATION
"I state that I am authorized by said applicant to prepare this docu	ument. It was prepared under my supervision and direction. The facts
stated herein are true, accurate and complete to the best of my kn Wade A. VandenBosch, P.E.	nowledge." 4/5/11
Name and title (printed or typed)	Authorized Signature Date/



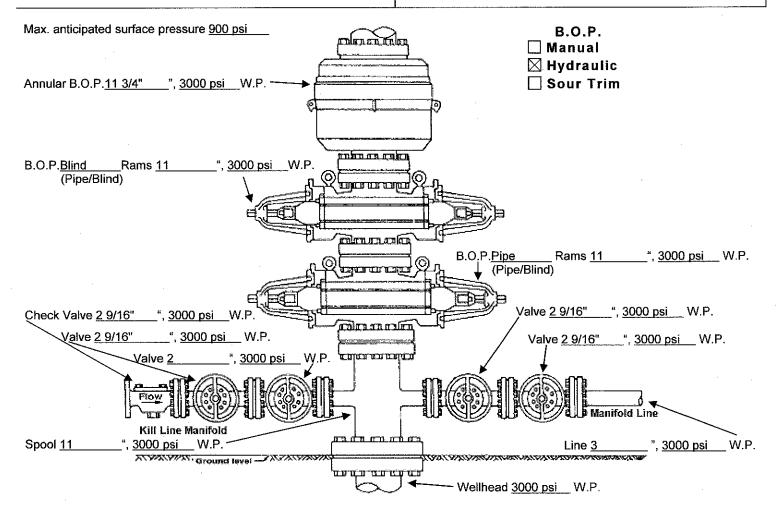
# WELLHEAD BLOWOUT CONTROL SYSTEM

Worksheet supplement for "Application for Permit to Drill or Deepen a Well

This information is required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, Act 451 PA 1994, as amended, in order to obtain a permit.

Applicant
West Bay Exploration Company
13685 South West Bay Shore, Suite #200
Traverse City, MI 49684

Well name and number
West Bay #1-22 SWD



Fill above blanks with applicable information. If not applicable, enter "N.A." or cross-out item shown. Describe test pressures and procedure for conducting pressure test. Identify any exceptions to R324.406 being requested.

# BOP Testing, Inspection, Training and Maintenance

# **BOP Testing Procedure**

The Annular, double gate, HCR, Accumulator as well as all auxiliary equipment shall be tested when installed and every 14 days there after. We shall follow an overbearing program to protect all parties involved. BOP testing shall go as follows:

- 1. When the BOP is installed after running casing
  - (a) Fill hole, close blind rams, close standpipe, open kill line master and control valves, open choke line master and control valves, open HCR, open master valve on panic line, open inward choke valves, open chokes, close panic line control valve and isolation valves for chokes. Do low pressure test (200-300 psi) for 5 min. Do high pressure test (1500psi) for 5 min. Record in Book
  - (b) All following test will have same pressures and time limits
  - (c) Bleed pressure off at pump and see if check valve closes and what pressure is left. Record in Book. Bleed off pressure
  - (d) Close inward valves on chokes and master valve on panic line. Do low pressure test. Record. Do high pressure test and record. Bleed off
  - (e) Open blind rams and RIH with BHA and drill pipe (no float), circulate out air
  - (f) With the Kelly made up into string Close pipe rams, close master valve on kill and choke line, Disconnect kill line at check valve. Do low pressure test and record, do high pressure test and record, bleed off
  - (g) With pipe rams still closed, open master valves on kill and choke lines, close control valves on kill and choke line, do low pressure test and record, close upper kelly cock and bleed off at pump, record and open upper kelly cock, do high pressure test and record, close upper Kelly cock and bleed off at pump and record. Open Kelly cock and bleed off
  - (h) With pipe rams closed, kill and choke lines closed, do low pressure test and close standpipe trapping pressure, bleed off at pump and record. Same with high pressure test
  - Open pipe rams, close bag, close kill line, open control and master valves on choke line, close HCR valve, do low pressure test and record, do high pressure test and record, bleed off
  - Reconnect kill line and open both valves, install FOSV in drill pipe. Through kill line do low pressure test and record, do high pressure test and record, bleed off
  - (k) Take off FOSV and install internal preventer, Through kill line do low pressure test and record, do high pressure test and record, bleed off
  - The auxiliary pump line valve will be tested every time as well as most other valves
  - (m) Check all levels in accumulator and back up systems, Record in Book.
- During normal operation every 14 days
  - (a) Blind rams will be tested when out of the hole with a test plug
  - (b) Pipe, bag and HCR will be tested while still inside the shoe on trip in the hole with a test plug
  - (c) All low and high pressure test will be the same
  - (d) All shall be recorded in Book

# **BOP Inspection and Actuation**

All required BOP equipment shall be actuated periodically to ensure operational readiness. Following are the minimum frequencies.

- 1. Every 12 hour shift the following are to be performed:
  - (a) Check the accumulator pressure
  - (b) Check the pressure of the emergency back-up system
  - (c) Check the hydraulic fluid level in the accumulator
  - (d) Check air pressure to support system
  - (e) Record all of the above in IADC Log Book and well Ledger
- 2. Every trip, but do not do twice in 24 hours
  - (a) Function test pipe rams (when inside shoe)
  - (b) Function test blind rams(when out of hole)
  - (c) Operate all Kelly cocks
  - (d) Check Drill pipe safety valve
  - (e) Function test HCR valve
  - (f) Record all of the above in IADC Log Book and well Ledger
- 3. Every 7 days or 1 week actuate the following:
  - (a) Annular preventer
  - (b) All gate valves in the choke and kill system
  - (c) Inside BOP
  - (d) Record all of the above in IADC Log Book and well Ledger

# **Crew Training and Drills**

BOP Practice drills and training sessions shall be conducted at least once each week for each crew. These drills shall be performed with everyone on site to provide training for each crew member to ensure:

- A clear understanding of the purpose and the method of operation of each preventer and all associated equipment
- 2. The ability to recognize the warning signs that accompany a kick
- 3. The crew shall be aware this is a shallow slim hole which reduces volume in the annulus and requires increased attention
- 4. A clear understanding of each crew members station and duties in the event of a kick while drilling, tripping or out of the hole
- A clear understanding of the maximum allowable casing pressure (MACP) and the significance of the pressure for well conditions that exist at the time of the drill or training session

# **BOP Records Requirements**

- A record of all inspections and tests must be recorded in IADC Log book and well ledger
- 2. A record of all crew drills and training sessions must be kept in the IADC Log book and well ledger

# **BOP Maintenance Requirements**

- All equipment shall be maintained in accordance with the manufacturer's recommendations
- 2. All maintenance records shall be kept for the past three years

# **Shut-In Procedure Drilling and Tripping**

# **Drilling**

- 1. For a kick while drilling stop the rotary and sound the alarm
- 2. Pick up drill string until the Kelly saver sub clears the rotary table
- 3. Stop the pumps
- 4. Close the annular preventer
- 5. Confirm that all flow from the well is stopped. No flow should occur from the choke manifold, the bell nipple or back through the drill string
- 6. Open the HCR valve
- 7. Read and record SIDPP (shut in drill pipe pressure) SICP (shut in casing pressure) Allow to stabilize first
- 8. Read and record the pit level increase
- 9. Notify Supervisor

The primary advantage of a hard shut-in is that the kick influx is held to a small volume because the well is closed in more quickly.

#### Tripping

- 1. For a kick while tripping immediately .set the slips and sound the alarm
- 2. Install and make up the FOSV in the drill pipe. It should be open
- 3. Close the drill pipe safety valve
- 4. Open the HCR valve
- 5. Close the BOP
- 6. Close the choke
- 7. Confirm that all flow from the well has stopped
- 8. Pick up and make up the Kelly
- 9. Record SIDPP and SICP
- 10. Read and record pit level increase
- 11. Notify Supervisor



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GO LOGICAL SURVEY

# **INJECTION WELL DATA**

Applicant West Ray Exploration Company

	I vvest day exploration company				
Supplemental information for drilling or converting to an injection well	13685 South West Bay Shore Drive, Suite 200				
By authority of Part 615 or Part 625 of Act 451 PA 1994, as amended.	Traverse City, MI 49684				
Non-submission and/or falsification of this information may result in fines and/or imprisonment.	Well name and number				
may result in lines and/or imprisonment.	West Bay 22 SWD				
ISTRUCTIONS: Complete all portions of form which apply to this well	Attach sunniamental documents as needed				

Also identify the permittee of each producing well within 1320 feet of 2. Enclose a copy of the completion reports for all wells and the plugginecessary to prevent injected fluids from migrating up or into inaded	ing records for all plugged wells shown on the plat. Identify what steps will be quately plugged or completed wells. ethis form with an Application To Change Well Status (form EQP 7200-6). Also delectric logs for this well.
5. Type of fluids to be injected	Schematic of wellbore construction
Brine Natural Gas (omit #7 & #12)	Complete bottom of diagram as needed to conform with proposed construction
Fresh Water (omit #12)  Other	(e.g. show rat hole below casing, open hole completion, packer loc. etc. )
	Fresh water fms., name & depth
Maximum expected injection rate 1,200 BWPD	GLACIAL DRIFT, 155'
	MARSHALL SS, 155'-226'
7. Specific gravity of injected fluid 1.193	
	Base of freshwater, name & depth
Maximum expected injection pressure 682 PSIG	MARSHALL SS, 226'
9. Maximum bottom hole injection pressure 2100 PSIG Show calculations BHP=.433*(1.193+.05)*2662-14.7+682=2100 PSIG (EPA formula)	Surface casing 11-3/4 "x 350 "  Amount of cement 335 sacks
10. Fracture pressure of confining formation 2647 PSIG	T.O.C. SURFACE
Show calculations ASSUME FG = 1 PSI/FT	
2662 FT * 1 PSI/FT - 14.7 PSIG/PSIA = 2647 PSIG	
11. Fracture pressure of injection formation 2115 Show calculations ASSUME FG = 0.8 PSI/FT 2662 FT * 0.8 PSI/FT - 14.7 PSIG/PSIA = 2115 PSIG	Intermediate casing (if applicable)  8-5/8 "x 900 '  Amount of cement 265 sacks  T.O.C. SURFACE
12. Chemical analysis of representative samples of injected fluid	
Specific conductance .046 OHM METERS	Long string casing <u>5-1/2</u> "x <u>2680</u> ,
Cation (mg/l) Anions (mg/l)	Amount of cement 425 sacks
Calcium <u>28,400</u> Chloride <u>174,000</u>	T.O.C. SURFACE
Sodium <u>37,600</u> Sulfate <u>315</u>	1.0.0. <u>30 N AGE</u>
Magnesium 4,870 Bicarbonate 230	\  \
Potassium 3,000	
What was the source of this representative sample? <u>LANTIS 2-30</u>	Confining formation(s) A2 EVAPORITE
SEE ATTACHED COPY  13. Is this well to be completed in a potential or previous oil or gas	Depth to top 2634
	Depth to base 2662
producing formation?  Yes  No If yes, provide a list of all offset permittees and proof of service of	Depth to base 2002
notification of this application to all permittees by certified mail.	
	Injustice formation(a) NIACADANI
Attach proposed plugging and abandonment plan. OR     Briefly list depths, volumes and types of cement and mechanical	Injection formation(s) NIAGARAN  Depth to top 2662
-	Depth to base 3032
plugs and depths where casing will be recovered.	Deptil to base 5002
SET CEMENT RETAINER AT 2,630' AND SQUEEZE PERFS W/	·
50 SX OF CLASS A CMT. PLACE 50 SX CMT ON TOP OF	Tubing 2-7/8 " x 2630 "
CMT RET. SPOT 25 SX PLUG AT 1,000'. SPOT 40 SX FROM	Tubing <u>2-7/8                                    </u>
350 FT TO SURFACE. CUT OFF ALL CSGS, WELD ON 1/2"	i acker pehili zooo
STEEL PLATE, WELD ON STATE AND EPA PN'S.	Bottom TD or PBTD <u>2950</u> ft

15. Application prepared by (print or type):

Date

1/25/2011



# **APPENDIX 5**

SPL Inc. 459 Hughes Drive Traverse City, MI 49686

Phone: (231) 947-5777 Fax: (231) 947-1072

#### **GENERAL WATER ANALYSIS**

WorkOrder: T10080299 LANTIS 2-30 WELL

Lab ID:

T10080299001

Sample ID: LANTIS 2-30 WELL

Date/Time Received: 8/26/2010 10:51

Matrix:

Water

Date/Time Collected: 8/19/2010 12:30

Method	Parameters	Results	Analyzed			
	ANION					
EPA 310.1	Alkalinity, CO32- as CaCO3	ND mg/l	09/02/2010 14:19 by MD			
EPA 310.1	Alkalinity, HCO3- as CaCO3	230 mg/l	09/02/2010 14:19 by MD			
EPA 325.2	Chloride	174000 mg/l	09/10/2010 16:27 by MD			
EPA 375.4	Sulfate	315 mg/l	09/09/2010 14:20 by MD			
EPA 376.2	Sulfide	ND mg/l	09/09/2010 15:49 by JS			
	CATION					
EPA 200.8	Calcium	28400 mg/l	09/09/2010 21:40 by JS			
EPA 200.8	Magnesium	4870 mg/l	09/09/2010 22:39 by JS			
EPA 200.8	Potassium	3000 mg/l	09/09/2010 22:39 by JS			
EPA 200.8	Sodium	37600 mg/l	09/09/2010 21:40 by JS			
EPA 200.8	Barium	2.25 mg/l	09/09/2010 22:39 by JS			
EPA 200.8	Iron	81.4 mg/l	09/09/2010 22:39 by JS			
	OTHER					
EPA 150.1	pH	6.1 SU	09/03/2010 11:59 by MD			
EPA 120.1	Resistivity	0.0460 ohm-meter	09/03/2010 00:37 by MD			
ASTM D1429	Specific Gravity	1.193	09/08/2010 14:39 by JS			
	Total dissolved solids (calculated) =	248498.65				

Report ID: 19214 - 1369933

Printed: 09/13/2010 16:48

Appendix 1p2/2

1/4 mile area of review owners

Larry and Linda Klopfer 12160 Ladd Rd Brooklyn, MI 49230

Michael and Laura Caines 12148 Ladd Rd Brooklyn, MI 49230

Peggy Cornell 10875 Bettis Rd Brooklyn, MI 49230

Robert Waldron and Joyce Hill 12767 Waterman Rd Brooklyn, MI 49230

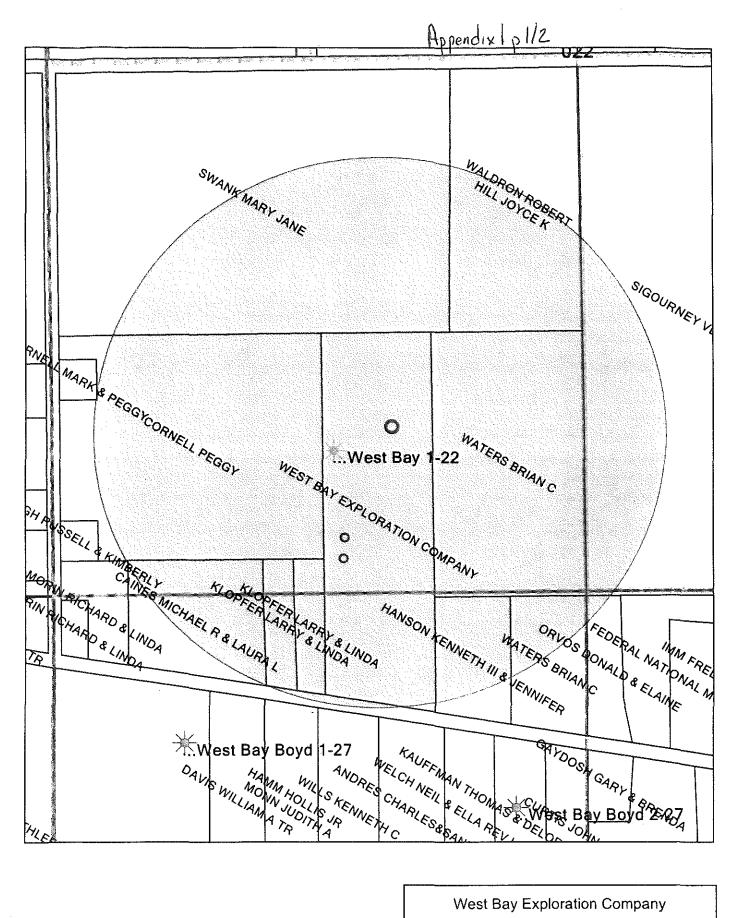
Brian Waters 20310 Schwab Brooklyn, MI 49230

Mary Jane Swank 12101 Waterman Brooklyn, MI 49230

West Bay Exploration Company 13685 S West Bay Shore, Suite 200 Traverse City, MI 49684

Kenneth and Jennifer Hanson 12190 Ladd Rd Brooklyn, MI 49230

Donald and Elaine Orvos 12536 Ladd Rd Brooklyn, MI 49230



West Bay Exploration Company							
SWD 1/4 Mile Area of review							
January 25, 2011	16:25:23						
link map 9-14-10.gm		KWaterson					

Deg	<b>a</b>	MICHIGAN			VIRONMENTA						SURV	ΞY				
Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Well				ILLING OR DEEPENING s, of Act 451 PA 1994, as Permit number/Deepening number												
arnended. Non-submission and/or falsification of this information may result in				,						Ì						
·				API number												
(Submit 3 copies within 60 days of drilling completion.)			21-075-59996													
<u> </u>			Well name and number								$\neg \neg$					
Name and add	rt 615 Oil/G dress of permi	as Well (	Part 62	25 Mineral	Well	West Bay #1-22 Surface location										
West Bay E						NW 1/4 of SE 1/4 of SW 1/4 Section 22 T4S R2E										
13685 S. W	•	ore				Township County										
Suite 200						Norvell Jackson										
Traverse C	itv Mi. 4968	4				Footages North/South East/West										
Name and add	dress of drilling	g contractor					from N			nd 57		from E		e of sec		
Advanced I	Enerav Serv	ices				Directionally		(check t	one)	}	Previou	ıs permit	numbers		İ	
P.O. Box 8	and the second s					Yes No Subsurface location (if directionally drilfed)										
South Boar	dman Mi.					}			nsnon	-			<b>-</b>			
49680 Date drilling b	Agan .	т	Date drilling	completed		1/4 of Township	1/	4 of		1/4 Se	Coun	hr.	Т	R	——	
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01/11/2010 Total depth of	weil			at total depth	·	Footages	N	orth/Sot	uth		——	Ea	st/West			
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Elevations			Didox IXII		<u></u>	Feet drilled		tools			Feet di	illed - rot				
к.в. 1028.2	4 ft. R.F.	ft.	R.T. 1027	ft. Grd 1	015.27 ft	from		to		ł	from S	urf	to	4370'	}	
		<u>, , , , , , , , , , , , , , , , , , , </u>														
Casin	g, Casing Lir	ers and Co	ementing, (		rings		Wate	r Fill Up	۶ (F,Ų.	) or L		ulation	L.C.) (X)			
Size	Where set	<del></del>	ment	T.O.C.	Ft. pulled	FF	ormatio	ת		F.U.	L.C.	Depth		Amount		
11.3/4"	419'	150 lite		surface	<del> </del>	Niagaran				Х	2920	2920 partial				
8 5/8"	3112'	600 lite		surface	<del> </del>	<del> </del>										
_5_1/2"	4151'	80 Halo		1998'												
		300 Ha	cem	<del>                                     </del>	<del> </del>	<b> </b>		····				<del></del>				
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	Gross	Pay Interva	als		·	All Ot	her Oil	and Gas	s Sho	ws Ob	served	or Logg	ed			
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Trenton/Bla	ck River	.both	3966'	4290' Form:				Depth		Sam	-			Mud Gas Fill		
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Depth Correction Deviation					on Survey		-				Plugged	Back				
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				Geophysi	cal / Mechani	cal Logs (list	each ty	ре гил)				·				
	Brand				Log types		Logged intervals									
Baker Atlas	<u> </u>			CNL/GR				TD-S								
			DLL/I	MLL/GR	<del> </del>	~		TD-Min								
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Notice: Repor	t complete co	mnle and fo	mation rec	ord coring w	ecord, and drill	stem tool in	formatio	n on sev	oreo c	ide		· ·				
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Timothy L. Baker Submit to: C

Name and title (print)

Signalure\_

Date

02/15/2010

# DEĐ

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY -- OFFICE OF GEOLOGICAL SURVEY

# RECORD OF WELL COMPLETION

as amended. Note-subhrasce and and/or lastification of this information may result in fines and/or implicanment. Qill & Gas Well campletion.)	- u u.	-(5:16:5		( A 454 D A 40D		1	mber/deepenin	g permit no.	API number		
information may result in fines and/or imprisonment.  (Submit 3 copies within 60 days of well completion.)						59996			21-075-5	9996 <u>-</u> 00-	00
Substitution   Subs					-	1 .		letion)			
Part 615 Oil/Gas Well	(0.14.2										
Name and address of permittee   West Bay Exploration   13685 S. West: Bay Shore #200   Traverse City, MI 49684     Directionally drilled (check one)						1					
Strimulation   Str			Pan	025 Wilheral VVell	<del></del>	vvest Ba	ay 1-22		<del></del>		
Directionally drilled (check one)	West Bay Explora 13685 S. West B	ation ay Shore #20	0								
NW N of SE	Directionally drilled (c		Previou	s permit numbers				ΤΛ	'.D.		
NW % of SE	Surface location		L			Subsurfac	ce location (if d	irectionally d	rilled)		
North/South   Footages: Nort	NW 14 of SE 14	of SW 1/4 Sec	tion 22	T4S R	2E					T	R
The complete			,	on		Township			County		
Part 615 - oil/gas wells   Producing formation(s)   Injection formation(s)   Date of first injection   Disposal formation(s)   Solution formation(s)   Date of first injection   Disposal formation(s)   Solution formation(s)   Solution formation(s)   Date of first injection   Disposal formation(s)   Solution formation(s)   Date   Date   Number holes   Perforation or open hole interval   Yes	Footages: Nort	h/South	<u> </u>	East/West		Footages	: North/S	outh		EaslWes	<u> </u>
Date well completed 2/5/2010   Producing formation(s)   Injection formation(s)   Date of first injection   Disposal formation(s)   Solution formation	750 Ft. from SO	uth line and 140	0 Ft. 1	from West line	of Sec.		Ft. from	line and	Ft. f	rom	line of Sec.
COMPLETION INTERVALS(S)											
Number holes				s) Injection form	ation(s)	Date of fi	st injection	Disposal fo	ormation(s)	Solution	formation(s)
Number holes				СОМ	PLETION	INTERV	ALS(S)			· · · · · · · · · · · · · · · · · · ·	
STIMULATION BY ACID OR FRACTURING	Date	Number hole			Derfo	ration or one	en hole interval			I	Open No
STIMULATION BY ACID OR FRACTURING				224_4254'		ration or ope	SIT HOLE ALLEI VAL	<del></del>	···············		
Date   Interval treated   Materials and amount used	1/30/2010	100		27-7207				<del></del>		<del>  ^</del>	
Date   Interval treated   Materials and amount used								<del></del>	·- /- /-	<b>†</b>	
Date   Interval treated   Materials and amount used						<del></del>		····			
Date   Interval treated   Materials and amount used											
Date   Interval treated   Materials and amount used											
Date   Interval treated   Materials and amount used		<u> </u>									
Date   Interval treated   Materials and amount used				CTIMUI ATI			TO A CTUDIA	ic			
1/30/2010   4224-4254;   500 gallons 28% Hcl Acid   6000 gallons 28% Hcl Acid w/ 20 Ball sealers   6000 gallons 28% H	Date	1	Inten		N 10 M	CID OK I	-KACTOKII		d amount use		
2/4/2010 4224-4254; 6000 gallons 28% Hcl Acid w/ 20 Ball sealers  Cherations Ciffic  PRODUCTION TEST DATA  Oil Gravity Condensate Gas Water H <sub>2</sub> S BH.P. and Bbls/day Grains/100 ft <sup>3</sup> .	<del></del>	4224-4254		out trouted		500 031	lone 28% H		o billount us		
PRODUCTION TEST DATA  PRODUCTION TEST DATA  Oil Gravity Condensate Gas Water H2S BH.P. and Bbls/day Grains/100 ft <sup>3</sup> .									20 Ball se	ealers	
PRODUCTION TEST DATA  Oil Gravity Condensate Gas Water H <sub>2</sub> S B.H.P. and Bbls/day "API Bbls/day MCF/day Bbls/day Grains/100 ft <sup>3</sup> .		1000				1					
PRODUCTION TEST DATA  Oil Gravity Condensate Gas Water H <sub>2</sub> S B.H.P. and Bbls/day "API Bbls/day MCF/day Bbls/day Grains/100 ft <sup>3</sup> .											
PRODUCTION TEST DATA  Oil Gravity Condensate Gas Water H <sub>2</sub> S B.H.P. and Bbls/day "API Bbls/day MCF/day Bbls/day Grains/100 ft <sup>3</sup> .									C.N.	Prations	Office
PRODUCTION TEST DATA  Oil Gravity Condensate Gas Water H <sub>2</sub> S B.H.P. and Bbls/day MCF/day Bbls/day Grains/100 ft <sup>3</sup> .		1									
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Bbls/day Grains/100 ft <sup>3</sup> .									<del></del>		
200 47 90 0 NA 1768 @ 4										3. B	f.P. and depth
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					_						
							<u> </u>				
CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The stated herein are true, accurate and complete to the best of my knowledge."	stated herein are ti	rue, accurate a		plete to the best	of my kn		is prepared u	nder my su	pervision ar	nd directio	on. The facts
Name and title (print or type)  Timothy L. Baker Operations Manager  Signature  2/16/2010			/lanage	_ 1 * *	a s		Este				
Suhmit to: OFFICE OF GEOLOGICAL SURVEY MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY		Sul	hmit ta								

PO BOX 30256

LANSING MI 48909-7756

EOP 7130 (rev. 8/2004)



# MICHIGAN DEPAR ...ENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

Traverse City Mi, 46684	Described by a	nudbactus of D	art 615 Cupa			VELL DK					t number	/DeeDenir	o numbi		<del></del>
County   C										1		neebeur	ig nome	G1	
Submit 3 coples within 60 days of drilling completion.	amenaca. Tw	on gapane	andio (dio	nogeron or the		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				10001	U	<del> </del>			
Wars Bay Exploration 3665 S. West Bay Shore Julie 200  Wast Bay Exploration 3665 S. West Bay Shore Julie 200  Variety Services Julie 200  Variety Services 20. Box 85  South 8 Box 85  271 ft.	(Sub	omit 3 copie	s within 60 d	lays of drilli	ng completi	on.)	21-075-6	0010	er		·			<del></del>	
West Bay Exploration   SW 14s of SW 14s Set 14 of SW 14s Set 14s				Part 62	5 Mineral	Well			l #1- <u>2</u> 7						
Township   County   Jackson   Township   Lackson   Township   Lackson   L									1/4 of S	SW 1/	4 Section	22	T4S	R2E	i
Norvell   Jackson   EastWeet   Footages   North/South   Jackson   EastWeet   Interverse City Mil. 49684   Interverse City Mil. 49684   Interverse City Mil. 49684   Interverse City Mil. 4968   Inte									<u></u>	Ī		<del></del>			
Traverse City Mil. 49684   Foolspes   North-South   East-Weet   Cornection   Valued Energy Services   O. Box 85   Co. Box 86   Co. Bo	Suite 200	ACOL DOA C	211016				Norvell				Jackso	n			
Directorally direct Check one   Previous permit numbers		City Mi. 496	584				Footages						West		
CO. Box 35 South Boardman Mi. 9680 South Boardman Mi. 9680 Date drilling began Date drilling completed Township County NW 14 of NW 1/4 of NW 1/4 Section 27 T 4S R 2E Township County Norvell Jackson Date State Date State Date of Norvell Jackson Date State Date State Date State Date Date Date Date Date Date Date Date	Name and ad	idress of drill	ing contracto	r	•	:				and 14				of sec	<i>.</i> .
NW 1/4 of NW 1/4 of NW 1/4 Section 27 T 4S R 2E	P.O. Box 8	35	ervices				X Yes [	No		illy deille		permit n	impers		
Depth Correction   Depth Corre		rdman Mi.					i		•	-		n 27	т 4S	R 21	F
Oz/14/2010   Oz/14/2010   Formation at total depth   Formation   Oz/14/2010   Feet drilled - cable tools   Feet d		pegan	<del></del>	Date drilling	completed	<del></del>		0, 1400	17701						
Formation at total depth   Footages   North/South   EastWest   Stage   River   Stage    •			_	•		Norvell				Jacks	son				
Feet drilled - cable lools   Feet drilled - rotary looks   Feet drilled - rotary looks   Feet drilled - rotary looks   Feet drilled - rotary lools   Feet drilled - rotary looks   Feet								No	rth/South			East	West		
Casing, Casing Liners and Cementing, Operating Strings  Water Fill Up (F,U.) or Lost Circulation (L.C.) (X)  Size Where set Cement T.O.C. Pt. pulled Formation F.U. L.C. Depth Amount 11 3/4" 426" 150 lite/150 A surface Niadaran X 3220 Partial 86/6" 3333" 650 lite/200 A surface Trenton/Riack River X 4267 Full 51/2" 4151" 80 Halcem 2580' 750 Halcem 750	Driller 4495	Log 4	490	Black Riv	er		<u> </u>			and 66				of sec	<b>3</b> .
Casing, Casing, Liners and Cementing, Operating Strings  Water Fill Up (F.U.) or Lost Circulation (L.C.) (X)  Size Where set Cement T.O.C. Ft. pulled Formation F.U. L.C. Depth Amount  11 3/4" 426' 150 lite/150 A surface Niadaran X 3220 Partial  8 6/6" 3333' 650 lite/200 A surface Trenton/Black River X 4267 Full  2580' 4151' 80 Halcem 2580'  Cross Pay Intervals  Formation Oil or Gas From To Where Observed (X)  Trenton/Black River bcth 4273' TD Formation Oil or Depth Samples Odor Fits Line Log Up  Depth Correction Run at Degrees Yes No Depth  Geophysical / Mechanical Logs (list each type run)  Brand Log types Logged Intervals  CRICK/CCL (Unable to run open hole 4487'-Surf  SBT/GR/CCL 4487'-C100'  Notice: Report complete sample and formation record, coring record, and drill elem test information on reverse side.  SERTIFICATION 'I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, societies of the protein part of the complete to the best of my knowledge.  Name and title (print)  Signature  Submit to: OFFICE OF GEOLOGICAL SURVEY,	Elevations		<u>-</u>				Feet drilled	- cable to	ols	_		_	•		
Size   Where set   Cement   T.O.C.   Ft. pulled   Formation   F.U.   L.C.   Depth   Amount	к.в. 1043	ft. R.F.	ft. R.	T. 1042 ft	. Grd 1	029 ft	from		to		from Si	<u>irf</u>	to	ΓD	
Size   Where set   Cement   T.O.C.   Ft. pulled   Formation   F.U.   L.C.   Depth   Amount		<del></del>								<del></del>					
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Second Content of Co					1	<del> </del>			VEF		1		7	<u> </u>	
Gross Pay Intervals Formation Oil or Gas From To Formation Oil or Depth Sam- Plus Odor Pits Line Log Up  Depth Correction Depth Correction Run at Degrees Pattached Cirectional  Geophysical / Mechanical Logs (list each type run) Log bytes CNL/GR/CCL (Unable to run open hole 4487-Surf SBT/GR/CCL  Voice: Report complete sample and formation record, coing record, and drill stem test information on reverse side CERTIFICATION 1 state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, 20/19/2010  Name and title (print) Submit to: OFFICE OF GEOLOGICAL SURVEY,  Submit to: OFFICE OF GEOLOGICAL SURVEY,		T	1			T	Tremun		<u> </u>						
Gross Pay Intervals  Formation  Oil or Gas From To  Formation  Oil or Gas From To  Formation  Oil or Depth Samples  Odor Pits Line Log Up  Depth Correction  Deviation Survey  Plugged Back  Depth  Geophysical / Mechanical Logs (list each type run)  Brand  CNL/GR/CCL (Unable to run open hole 4487'-Surf  SBT/GR/CCL  SBT/GR/CCL  Voice: Report complete sample and formation record, coring record, and drill stern test information on reverse side.  CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."  Name and title (print)  Timothy L. Baker  Submit to: OFFICE OF GEOLOGICAL SURVEY,  SIgnature  Submit to: OFFICE OF GEOLOGICAL SURVEY,	<u> </u>	, , , , , , ,			,										
Formation Oil or Gas From To Oil or Depth Sam- Depth A273' TD Formation Oil or Depth Sam- Depth Correction Depth Gas Pill Line Log Up  Depth Correction Run at Degrees Yes No Depth Sam- Depth Correction Run at Degrees Yes No Depth Sam- Depth Correction Run at Degrees Yes No Depth Sam- Depth Correction Run at Degrees Yes No Depth Sam- Depth Correction Run at Degrees Yes No Depth Sam- Depth Correction Run at Degrees Yes No Depth Sam- Depth Sam- Depth Sam- Depth Sam- Depth Sam- Sam- Depth Sam- Sam- Depth Sam- Sam- Depth Sam- Sam- Sam- Depth Sam- Sam- Sam- Sam- Sam- Sam- Sam- Sam-							<u> </u>				<u> </u>		<u> </u>		
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Trenton/Black River both 4273' TD Formation Oil or Depth Samples Odor Pits Line Log Up  Depth Correction Deviation Survey Plugged Back Depth Correction Run at Degrees Yes No Depth See affached directional Log (list each type run)  Brand Log types Logged Intervals  CNL/GR/CCL (Unable to run open hole 4487'-Surf SBT/GR/CCL 4487'-2100'  Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side  CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."  Name and title (print) Timothy L. Baker Submit to: OFFICE OF GEOLOGICAL SURVEY.					To I		All O	ther Oil a	nd Gas Sho	ows Ot				7	
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Depth Correction Run at Degrees Yes No Depth  Geophysical / Mechanical Logs (list each type run)  Brand Log types Logged intervals  CNL/GR/CCL (Unable to run open hole 4487'-Surf  SBT/GR/CCL 4487'-2100'  Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.  CERTIFICATION "I state that I arm authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."  Date Name and title (print)  Timothy L. Baker  Submit to: OFFICE OF GEOLOGICAL SURVEY,															
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CNL/GR/CCL (Unable to run open hole 4487'-Surf SBT/GR/CCL 4487'-2100'  Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.  CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."  Date Name and title (print) Signature  O2/19/2010 Timothy L. Baker  Submit to: OFFICE OF GEOLOGICAL SURVEY,				<del></del>	Geophysi		cal Logs (lis	st each typ	e run)						
SBT/GR/CCL  SBT/GR/CCL  4487'-2100'  Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.  CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."  Date  Name and title (print)  Timothy L. Baker  Submit to: OFFICE OF GEOLOGICAL SURVEY,				01111	OD/001 //				44071.0		Logge	d interval:	·		
Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.  CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."  Date  Name and title (print)  Timothy L. Baker  Submit to: OFFICE OF GEOLOGICAL SURVEY,	Baker Atla	<u> S</u>				<u>Unable to ru</u>	in open no				·				
CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."  Date  Name and title (print)  Timothy L. Baker  Submit to: OFFICE OF GEOLOGICAL SURVEY,				1 201/	311/CCL		<del></del>		<u>4407 -211</u>	<u></u>					
CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."  Date  Name and title (print)  Timothy L. Baker  Submit to: OFFICE OF GEOLOGICAL SURVEY,						<del></del>									<del></del>
Date Name and title (print)  O2/19/2010 Timothy L. Baker  Submit to: OFFICE OF GEOLOGICAL SURVEY,	Notice: Repo	rt complete s	sample and f	ormation rec	ord, coring r	ecord, and drill	stem test in	formation	on reverse	side.					
02/19/2010 Timothy L. Baker Submit to: OFFICE OF GEOLOGICAL SURVEY,	CERTIFICAT accurate and	TION "I state I complete to	that I am au the best of r	thorized by s ny knowledg	said owner.	This report was	s prepared u	inder my s	upervision	and din	ection. T	he facts s	tated he	rein are	true,
Submit to: OFFICE OF GEOLOGICAL SURVEY,	Date		Name and ti	tle (print)				S	Signature -	,		7.	177		
Submit to: OFFICE OF GEOLOGICAL SURVEY,	02/19/2010	0	Timothy L	. Baker					ه بین سوشسیسی		· · · · · · · ·	-22			
			Subm	it to: OFF				——— ————		, , , , , ,					

PO BOX 30256, LANSING, MI 48909-7756

EQP 7200-5 (rev. 8/2004)



# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

# RECORD OF WELL COMPLETION

		•	4500 45 45 46 46		Permit nu	mber/deepenir	a nemit no	API numbe	<u> </u>		
By authority	of Part 615 or Part 6	25 of A	ct 451 PA 1994,		60010	преписсрени	g pemin no.	21-075-6		-00-00	
	d. Non-submission ar				£	eli (after comp	letion)	1210100			
informatio	on may result in fines a	and/or I	тривоптец.		Oil & Ga	•	,				
(Submit 3	copies within 60 days	s of wel	I completion.)			⇒ & number	~ <u></u>				
	15 Oil/Gas Well				1	ay Boyd 1-2	7				
Name and address o West Bay Explor 13685 S. West B Traverse City, M	ation Bay Shore Dr #200	)				- <u>, -, -, -</u>	PIL				
Directionally drilled (o		vinue n	ermit numbers		Total dept	h of well	<del></del>				<del></del>
Yes No	Lifeck offe)	vious p	enna nombers		M.D.		T.V				
Surface location	0.11			٥.	1	e location (if d	-			_	
	of SW 1/4 Section		r 4S R	2E	<del></del>	of NW 1/2 of	INW 14S		T 45		2E
Township Norvell	Jai	inty ckson			Township Norvell			County Jackson			
	h/South		EastWest		Footages				East		
271 Ft. from So	uth line and 1440	Ft. from	n West line	of Sec.	600	Fl. from Nort	h line and 6	60 Ft. f	rom V	Vest lir	e of Sec.
	Part 615 - oil/ga		<b>Transport</b>					mineral wells			- <u>;</u>
Date well completed 2/20/10	Producing format Black River	ion(s)	Injection forma	ation(s)	Date of fir	st injection	Disposal fo	rmation(s)	Sol	ution for	nation(s)
			COMP	LETION	INTERV	ALS(S)					
										Op	
Date	Number holes	ļ		Perfor	ation or ope	n hole interval				es	No
2/19/2010	Open Hole	O.H.	4495-4525						X_		
		<u> </u>				<del></del>			<u> </u>		
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			STIMULATIC	NRYA	CID OR F	RACTURIN	ıc				
Date	T 1	nterval		רום אוי	T OIL	10010101		d amount us			
2/20/2010	4495-4525				5000 03	1 28% Hcl A					
2/20/2010	4480-4020		<del></del>	~~	1 3000 ga	1 20 /0   101 /	<u> </u>	<del></del>			
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			PRO	DUCTIC	ON TEST	DATA					
Oil	Gravity	1 0	ondensate		Gas	Wate		H₂S	1	B.H.P	and depth
Bbls/day	°API		Bbls/day	1	F/day	Bbls/da		Grains/100 fl	t <sup>3</sup> .		
200	47	+		95		to	- to			TBD	
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	1			<u> </u>		<u> </u>	<del></del>		1		
CERTIFICATION stated herein are t	"I state that I am au	uthoriz comple	ed by said ow te to the best	ner. This	report wa	s prepared u	nder my su	pervision a	nd dir	ection.	The facts
Name and title (print			Signalure			77		Da	te		
Timothy L. Baker	r Operations Man	ager		1.000	61 / H	5 len	•		2-	23	'-/0
	Submi		OFFICE OF	GEOLÓ	SICAL SUI	RVEY	TAL OLI		<u> </u>		
			MICHIGAN I PO BOX 302 LANSING M	256		ENVINONM	ENTAL QUA	ALII Y			
			M OAHONAT	+ <b>4</b> 0909-	1100						

EQP 7130 (rev. 8/2004)

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE / GEOLOGICAL SURVEY R ,ORD OF WELL DRILLING OR DEL , ENING

					25 Mineral We							er/Deepen	ing numl	er	
amended (	1011-2001-110-cit	III BIIGIOFIGIS		no anterment	on may result i	API numb		) III I E I I	<u>.</u>	6001	1				
(Su	bmit 3 copie	s within 60 d	lays of drill	ing comple	tion.)	21-075-	_								
•					•		e and nurr	nber							
	art 615 Oil/		Part 62	25 Minera	_Well	West Ba	ay & Boy	vd #2-	.27						
Name and a	ddress of peri	millee				Surface lo			-E		······································				
West Bay	Exploratio	n				SW 1/4		= 1/4 o	1 5	SW 1/4			T4S	R2E	Ξ
13685 S. V	West Bay S	Shore				Township	1			] (	County				
Suite 200						Norvell					Jacks				
	<u> City Mi. 496</u>					Footages		lorth/Sc					t∕Wesl		
1	ddress of drill	_	•				ft. from S					from W		e of se	C,
Advanced P.O. Box 8	Enerav Se 35	rvices				Yes						is permit r	numbers		
South Boa	ırdman Mi.					Subsurfac				•	•				_
49680		<del></del>	Davida da ilia		·	SE 1/4		E 1/4 o	1 1	4W 1/	_		T 4S	R 2	<u>:E</u>
Date drilling	•			completed		Township					Coun	-			
02/15/201 Total depth o			03/03/20 Extration :	10 at tolal depti		Norvell Foolages		lorth/Sc	outh.		Jack	son En	lWest		
(		1		,	1	1	ft. from N			ירני ב	مالا:				
Driller 4845 Elevations	Log 4	040	Black Riv	<u>rer</u>		<u> </u>	ed - cable		iine a			from Willed - rola		e of se	C,
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Casi	ng, Casing L	iners and Co	ementing. (	Operating S	trings		Wate	r Fill Li	In (F.U	) or Lo	st Circ	ulation (L	C 1 (X)		
Size	Where set		ment	T.O.C.	Ft. pulled	<u> </u>	Formatio		1	F.U.	L.C.	Depth		Amoun	1
11 3/4"	424'	150 lite/	150 A	surface		Niagara	ın.				х	3300	Parti	al	
8 5/8"	3417'	650 lite/		surface											
5 1/2"	4842'	75 Halc	em	3300"											
		150 Hal	cem	ļ'		ļ	· · · · · · · · · · · · · · · · · · ·						1		
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Form	Gross	Pay Interva	From	То		All C	Other Oil a	and Ga	is Sho	ws Obs	erved	or Logge Vhere Obs	erved ()	()	
		both	4510' _	4590'	Forma	tion	Oil or	D	epth	Sam-	<u></u>		Mud	Gas	Fill
Black Rive	<u> </u>	1000	17310	13000			Gas			ples	Odi	or Pits	Line	Log	Ųρ
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				<del></del>					,						
	Depth Co			<u> </u>		on Survey					Р	lugged B			
Dep	th	Corre	ction	<del></del>	Run at		Degrees		Yes	No			Depth		
see		attached		direction	nal				<u> </u>	<del> </del>					
				<del></del>		<del> </del>			<del> </del> -	<del> </del>		<del></del>			<del></del>
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				Geophysi	cal / Mechanic	al Logs (lis	st each Ive	ne run)		<del></del>		·····			<del></del> -
<u> </u>	Brand			<u> </u>	Log lypes		1				Logge	d intervals			
Baker Atlas			CNL/Z	DL/GR				4846	'-Surf					_,	
Daker Allas				ILL/GR	· · · · · · · · · · · · · · · · · · ·				-3417						
			<u> </u>	<u> </u>								<del></del>			
					<u> </u>	<del></del>									
Notice: Repor	complete sa	mple and for	mation reco	rd, coring re	cord, and drill	stem test in	formation	on rev	erse si	de.					
CERTIFICATI	ON "I state th	nat i am auth	orized by sa	aid owner. T	This report was	prepared u	inder my s	upervi	sion an	d direct	ion. Tl	ne facts st	ated her	ein are	true.
		ame and title			<del></del>		- 10	ignalu	Ve .			7			
Date	ĺ.		· ·					L	1 1 1	19/10-	\$ 1	7/			
06/20/2010		imothy L. Submit	oaker to: OFFI	CE OF GEC	DLOGICAL SUI	RVEÝ.			v - VC	-41		(m			
FOP 7200-5 (	rev 8/2004)		MICH	IIGAN DEP	T OF ENVIRON LANSING, MI	MENTAL (				0					

FORMATION F CORD

Attach additional sheets . necessary

API number

Tops taken from

Permit number/Deepening number 60011

Elevation used

1043

Geologist name

Fowler/Baker/Vancycle Driller's log

Sample log

Electric log

		Formation			Formation
From	То	(type, color, hardness)	From	То	(type, color, hardness
	•	illed, add true vertical depth formation tops			
where appro	222(log)	Drift- Unconsolidated sand and			
รบท์ .	222(10g)	gravel			
222	290	Shale& Sillstone- brn-gy-Grn, silty			
200	1230	at lop organic at base Shale-Coldwater- Md-dk Brn-			
290	1250	Blk,Silty, incr organic at base			
	1070	Curbin Ch/Para ciltatora Ch Add			
1230	1370	Sunbury Sh/Berea siltstone-Sh, Md Brn-Bik Silty,pyr. mixed w/siltstone,			
		SSO-Lt md brn, Arg			
1370	15	Antrim-Dk Brn-Blk,Pyrand incr			
		organic at base,SG incr toward base			
1554	1622	Traverse Fm- Limestone, Dk Brn-		·	
		md Brn, Dns, Pyr, Dolomite, Md Gy-			
1622	1744	Gy, Dns Traverse Limestone-Md Brn-lt Brn			
1022	}	Vfxln,Hd,			
1744	1978	Shale intbd w Dolomite and Lmst, Md Brn-Gy, Vfxln, Dns, Pos			
		Dundee@1728'-Brn-Lt brn,Poor			
		Samp,Pos Cvgs			
1978	2200	Detroit River- Anhydrite and Dolomite/Limestone, Lt-Md Brn			
		Dns,VfxIn in pt,NS			
2200	2416	Bass Island/Bois Blanc-			
		Dolomite, Anhydrite & Limestone AA			
2416	2685	G-Unit-Dolomite-Arg,Hd grading to	\		
2410		Anhydrite- Lt-md Gy Brn			
2685	2766	C Shale-Gy-rdBrn, W/Dolomite and Anhydrite, Lt gy-Brn-bf Poor Samp.	(18 <sub>0</sub> 1)		
2766	2972	B Evap-Anhydrite Wh-Lt Gy	If well was	s cored, attach core	description
2700		W/Dolomite-VfxIn, Lt-md Gy, Intbd			
	0400	at base with Anhy. AA			
2972	3160	Dolo &Limst-Wh-lt Gy,Dns,Anhydritic @3110-Wh, Dns	UF	RILL STEM TEST D.	AIA.
3160	3386	Niagaran-Dolomite,AA,Md Gy, VfxIn			·
7,00		Intbd W/Anhydrite AA,V porous			
		2880'-3300'	·		
2000	3884	Clinton/Cinn-Dolomite, Arg, hd, dk			
386		gy, grd to It gy intbd w/Lmst, It-md gy			
	1040	Dns			
884	4212	Utica- Shale, Gy-Grn, Gummy-Hd			
212	4526	Trenton-Dolo, Lt -Md Gy,Dns,W/ Lmst @ 4236'-4526' Lt-Md Gy			
		Brn, Vfxin,			
526	TD	Black River- Dolomite, Md Brn-			
	ļ	GyBrn,SO&G@4590'			



Job Number: DR100040

Company: WEST BAY EXPLORATION

Lease/Well: WEST BAY/ BOYD 2-27

Location: NORVELL TWP., JACKSON CO.

Rig Name: ADVANCED # 2

RKB:

G.L. or M.S.L.:

State/Country: MICHIGAN / USA Declination: 6.33 DEGREES WEST

Grid:

File name: C:\WINSERVE\ASDRIL-1\2010\BOYD227.SVY

Date/Time: 04-Mar-10 / 10:03

Curve Name: WESTBAY/BOYD 2-27 ( as drilled )

# Directional Drilling Contractors SURVEY REPORT

## WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method Vertical Section Plane 144.40 Vertical Section Referenced to Wellhead Rectangular Coordinates Referenced to Wellhead

	Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLO Distance FT	S U R E Direction Deg	Dogleg Severity Deg/100	
						12		ي څخه د د			
	KOP @ 48		·	a service de la companya de la compa	30 62°22 5 f						
1	484.00	.00	.00	484.00	.00	.00	.00	.00	.00	.00	
•	486.00	.70	169.10	486.00	~.01	.00	.01	.01	169.05	35.00	
	516.00	1.80	164,20	515.99	65	.17	.62	.67	165.64	3.68	
	546.00	3.20	162,10	545.96	-1.90	.55	1.86	1.97	163.79	4.68	
	576.00	4.70	161.00	575.89	-3.85	1.21	3.84	4.04	162.59	5.01	
	606.00	6.10	159.30	605.76	-6.51	2.17	6.56	6.86	161.54	4.70	
	636.00	7.70	157.80	635.54	-9.86	3.49	10.05	10.46	160.48	5.37	
	667.00	9.10	156.80	666.21	-14.04	5.25	14.47	14.98	159.51	4.54	
	697.00	10.70	157.80	695.76	-18.80	7.23	19.49	20.14	158.95	5.36	
	728.00	12.80	157.80	726.11	-24.64	9.62	25,63	26.45	158.68	6.77	
	728.00	12.00	107.00	720.11	-27.07	J.02	20,00	20.70	100.00	0.71	
	757.00	14.90	157.80	754.26	-31.07	12.24	32.39	33.39	158.50	7.24	
	788.00	17.30	157.50	784.04	-39.02	15.51	40.75	41.99	158.32	7.75	
	818.00	19.80	156.10	812.48	-47.78	19.28	50.08	51.53	158.03	8,46	
	848.00	22.10	154.30	840.50	-57,52	23.78	60,61	62.24	157.53	7.96	
	878.00	24.20	152.90	868.08	-68.08	29.03	72.25	74,01	156.90	7.24	
	907.00	26.50	151.50	894.29	-79.06	34.83	84.55	86.39	156,22	8.20	
		28.90	150.10	920.85	-91.22	41.64	98.41	100.28	155.47	8.29	
	937.00	31.00	148.00	947,71	-104.49	49.60	113.84	115.67	154.61	7.57	
	968.00	31.60	144.80	981.89	-121.79	61.10	134.60	136.26	153.36	4.42	
	1008.00			1007.43	-134.48	70.41	150.34	151.80	152.37	3,69	
	1038.00	31.70	142.70	1007.43	~ 34.40	70.41	100.04	131.00	152.57	3,03	
	1068.00	31.70	141.70	1032.95	-146.94	80.07	166.09	167.34	151.41	1.75	
	1097.00	31,90	141.70	1057.60	-158.93	89.54	181.35	182.42	150.60	.69	
	1126.00	32.20	142,00	1082.18	-171.03	99.05	196.73	197,64	149.92	1.17	

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W	Vertical Section FT	CLOS Distance FT	S U R E Direction Deg	Dogleg Severity Deg/100
1156.00 1177.00	32.10 32.30	141.70 142.00	1107.58 1125.35	-183.59 -192.39	108.91 115.82	212.67 223.85	213.46 224.56	149.32 148.95	.63 1.22
1207.00 1237.00 1267.00	32.40 32.70 33.00	142.00 141.70 142.00	1150.69 1175.98 1201.18	-205.04 -217.73 -230.53	125.71 135.68 145.73	239.89 256.02	240.50 256.54	148.49 148.07	.33 1.14
						272.27	272.73	147.70	1.14
1297.00 1327.00	32.60 32.10	141.70 141.30	1226.40 1251.74	-243.31 -255.87	155.77 165.76	288.51 304.54	288.90 304.87	147.37 147.06	1.44 1.81
1356.00 1385.00	32.40 32.40	141.30 141.70	1276.27 1300.75	-267.95 -280.11	175.44 185.11	319.99 335.51	320.27 335.75	146.79 146.54	1.03 .74
1415.00	31.80	141.70	1326.17	-292.62	194.99	351.44	351.63	146.32	2.00
1446.00 1476.00	31.80 30.90	141.70 140.60	1352.51 1378.13	-305.44 -317.60	205.11 214.90	367.75 383.34	367.92 383.47	146.12 145.92	.00 3. <b>56</b>
1506.00	30.20	140.60	1403.97	-329.38	224.58	398.55	398.66	145.71	2.33
1536.00 1566.00	30.20 30.40	142,00 143,10	1429.90 1455.80	-341.15 -353.17	234.02 243.22	413.62 428.75	413.70 428.82	145.55 145.45	2. <b>35</b> 1.97
1596.00	30.80 31.00	143,10	1481.62	-365.38	252.39	444.01	444.08	145.37	1.33
1626.00 1656.00	31.70	143.40 143.40	1507,36 1532,98	-377.73 -390.26	261.61 270.91	459.42 475.02	459.47 475.07	145.29 145.23	.84 2.33
1688.00 1719.00	31.90 32.30	143.10 142.40	1560.18 1586.44	-403.77 -416.88	281.00 290.97	491.88 508.35	491.93 508.38	145,16 145.09	.80 1.76
1750.00 1782.00	32.30 32.40	142.40 142.40	1612.65 1639.68	-430.00 -443.57	301.08 311.53	524.90 542.01	524.93 542.04	145.00 144.92	.00 .31
1813.00 1845.00	32.20 32.40	142.40 141.70	1665.88 1692.93	-456.70 -470.18	321.63 332.15	558.57 575.65	558.59	144.84	.65
1876.00	33.10	141.30	1719.00	-483.30	342.59	592.40	575.67 592.41	144.76 144.67	1.33 2.36
1908.00 1939.00	33.40 33.10	141,00 142,00	1745.76 1771.69	-496.97 -510.27	353.60 364.18	609.92 626.89	609.92	144.57	1.07
1970.00	32.60	143.10	1797.73	-523.62	374.40	643.70	626.90 643.70	144.48 144.43	2. <b>02</b> 2.51
2001.00 2031.00	32.60 32.60	143,10 143,40	1823.85 1849.12	-536.97 -549.92	384.43 394.10	660.40 676.56	660.40 676.56	144.40 144.37	.00 .54
2064.00 2096.00	32.90 33.20	144.80 144.80	1876.88 1903.70	-564,38 -578,64	404.57 414.63	694,41 711.86	694,41 711.86	144.37 144.38	2.47 . <b>94</b>
2127.00	33.40	144.80	1929.61	-592.55	424.44	728.88	728.88	144.39	.65
2158.00° 2189.00	33.70 34.00	144.10 144.10	1955.44 1981.19	-606.49 -620.48	434.40 444.52	746.01 763.28	746.01 763.28	144.39 144.38	1. <b>58</b> .97
2221.00	33.30	143.80	2007.83	-634.81	454.96	781.01	781.01	144.37	2.25
2252,00	32.30	143.10	2033.88	-648.31	464.96	797.80	797.80	144.37	2.25 3.45
2285.00 2317.00	32.20 32.50	143.10 143.10	2061.79 2088.83	-662.39 -676.08	475.53 485.81	815.41 832.52	815.41 832.53	144.33	.30
2348.00	32.40	143.40	2114.99	-689.41	495.76	849.15	849.16	144.30 144.28	.94 .61
2379.00	32.40	144.10	2141.16	-702.80	505.59	865.76	865.77	144.27	1.21
2411.00 2442.00	32.10 31.80	145.90 146.20	2168.22 2194.53	-716.79 -730.40	515.38 524.54	882.84 899.23	882.84 899.23	144.28 144.32	3.14 1.09
2474.00	31.20	145.20	2221.81	-744.21	533.96	915.95	915.95	144.34	2.49
2506.00	31.60	144.80	2249.13	-757.87	543.53	932.62	932.62	144.35	1,41

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W	Vertical Section FT	CLO: Distance FT	SURE Direction Deg	Dogleg Severity Deg/100
2538.00 2569.00 2601.00	31.50 31.40 31.40	144.10 143.40 143.10	2276,40 2302,84 2330,16	-771,49 -784,53 -797,89	553.26 562.82 572.80	949.36 965.54 982.21	949.36 965.54 982.21	144.35 144.34 144.33	1.19 1.22 .49
2632.00 2664.00	31.70 31.60	144.10 144.10	2356.57 2383,81	-810.95 -824.55	582.42 592.27	998.42 1015.22	998.43 1015.22	144.31 144.31	1.95 .31
2696.00 2727.00 2759.00	31.20 30.90 30.60	143.80 143.80 143.80	2411.13 2437.69 2465.19	-838.03 -850.93 -864.13	602.08 611.52 621.19	1031.89 1047.88 1064.24	1031.89 1047.88 1064.24	144.30 144.30	1.34 .97
2791.00 2823.00	30.30 29.60	143.40 142.40	2492.77 2520.50	-877.19 -889.93	630.81 640.45	1080.45 1096.42	1084.24 1080.45 1096.42	144.29 144.28 144.26	.94 1.13 2.69
2855.00 2886.00 2917.00	28.70 27.90 27.40	143.10 143.40 144.10	2548.45 2575.74 2603.20	-902.34 -914.11 -925.71	649,88 658,68 667,18	1112.00 1126.70 1141.08	1112.01 1126.70	144.24 144.22	3.01 2.62
2949.00 TOP NIAGE	27.20	144.50	2631.64	- <u>937</u> .63	675.75	1155.76	1141.09 1155.76	144.22 144.22	1.92 85
2972.00	26.34	144.22	2652.17	-946.05	681.78	1166.12	1166.12	144.22	3.79
2981.00 3013.00	26.00 25.60	144,10 143,40	2660.25 2689.06	-949.27 -960.50	684.11 692.34	1170.08 1184.01	1170.09 1184.02	144.22 144.22	3.79 1.57
3044.00	25.10	143.40	2717.08	<b>-97</b> 1.15	700.26	1197.28	1197.29	144.21	1.61
3075.00	25.00	143.40	2745.16	-981.69	708.08	1210.40	1210.41	144.20	.32
3107.00	24.90	143.80	2774.17	-992.56	716.09	1223.90	1223.91	144.19	.61
3139.00 3171.00	24.30 23.00	143.10 143.10	2803.27 2832.58	-1003.26 -1013.52	724.02 731.73	1237,22 1250.05	1237.23 1250.06	144.18 144.17	2.0 <b>8</b> 4.06
3202.00	22,20	143.40	2861.20	-1023.07	738.86	1261.96	1261.98	144.16	2.61
3233.00	21.70	144.50	2889.95	-1032.44	745.68	1273.55	1273.56	144.16	2.09
3264.00	20.80	145.50	2918.84	-1041.64	752.13	1284.79	1284.80	144.17	3.13
3296.00 3327.00	20.20 19.40	146.60 147.70	2948.82 2977.99	-1050.93 -1059.75	758.38 764.08	1295.99 1306.48	1296.00 1306.48	144.18 144.21	2.23 2.85
3358.00	18.80	148.40	3007.28	-1068.36	769.45	1316.60	1316.60	144.24	2.07
3368.00	18.80	148.40	3016.74	-1071.10	771.14	1319.81	1319.82	144.25	.00
3430.00	17.50	149.10	3075.66	-1087.61	781.16	1339.07	1339.07	144.31	2.13
3460.00 3492.00	16.30 15.10	148.40 146.60	3104.36 3135.17	-1095.07 -1102.37	785.68 790.33	1347.77 1356.41	1347,77 1356.41	144.34 144.36	4.06 4.05
3524.00	13.70	145.20	3166.16	-1108.97	794.79	1364.37	1364.37	144.37	4.51
3556.00	12.70	144,10	3197.32	-1114.93	799.01	1371.67	1371.67	144.37	3.22
3587.00	11.40	143.40	3227.63	-1120.15	802.84	1378.14	1378.14	144.37	4.22
3619.00	10.60	143.80	3259.04	-1125.06	806.46	1384.25	1384.25	144.37	2.51
3650.00 3682.00	9.20 7.70	144.80 146.20	3289.58 3321.23	-1129.39 -1133.26	809.58 812.24	1389.58 1394.28	1389.58 1394.28	144.37 144.37	4.55 4.73
3713.00	6.60	145.90	3351.99	-1136.46	814.40	1398.14	1398.14	144.37	3.55
3744.00	5.80	144.80	3382.81	-1139.22	816.30	1401.48	1401.48	144.38	2.61
3776.00	5.10	145.50	3414.67	-1141.71	818.04	1404.52	1404.52	144.38	2.20
3808.00 3839.00	4.50 3.50	145,90 143,40	3446.55 3477.48	-1143.92 -1145.69	819.55 820.79	1407.20 1409.36	1407.20 1409.36	144.38 144.38	1.88 3.27
3839.00	2.60	141.30	3508.43	-1145.09	821.80	1411.01	1411.01	144.38	3.27 2.93

Measured	Incl	Drift Discetion	True	N.C	C 181	Vertical		SURE	Dogleg
Depth FT	Angle Deg	Direction Deg	Vertical Depth	N-S FT	E-W FT	Section FT	Distance FT	Direction Deg	Severity Deg/100
3902.00	2.30	143,40	3540.40	-1148.08	822.63	1412.38	1412.38	144.38	.98
3934.00	1.70	141.00	3572.38	-1148.96	823.31	1413.49	1413.49	144.38	1.89
3965.00	.60	142.70	3603.38	-1149.45	823.70	1414.11	1414.11	144.37	3.55
3997.00	.30	80.50	3635.38	-1149.57	823.89	1414.32	1414.32	144.37	1.66
Projected	to Bit @ 4	045 MD					.,		
4045.00	.30	80.50	3683.38	-1149.53	824.13	1414,43	1414.43	144.36	.00
Projected	TD @ 484	5 MD		" <del>(                                   </del>	" · · · · <del> · ·</del>	= 1 + + + 1 + + + + + + + + + + + + + +			
4845.00	.30	80.50	4483.37	-1148.84	828.27	1416.27	1416.28	144.21	.00

Job Number: DR100040

Company: WEST BAY EXPLORATION Lease/Well: WEST BAY/ BOYD 2-27 Location: NORVELL TWP., JACKSON CO. Rig Name: ADVANCED #2

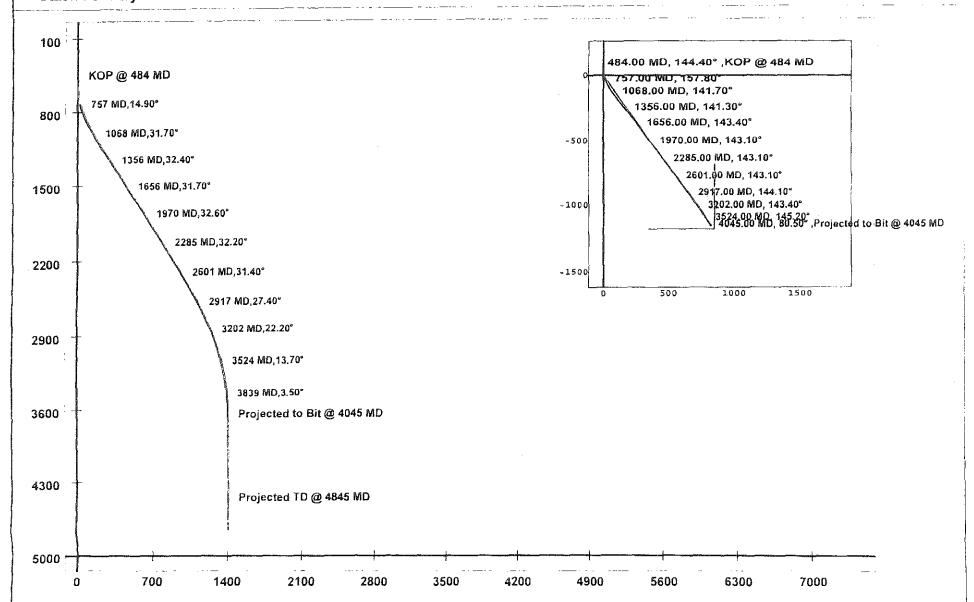
State/Country: MICHIGAN / USA

Declination: 6.33 DEGREES WEST File name: C:\WINSERVE\ASDRIL~1\2010

Date/Time: 04-Mar-10 / 10:01



Directional Drilling Contractors, LLC.





MICHIGAN DEP. MENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

# RECORD OF WELL COMPLETION

		,	ILCOND (	N. AA⊑						
By authority	of Part 615 or P	art 625 of A	ct 451 PA 1994,		Į.	umber/deepenin	g permit no.	API number		
as amended	. Non-submissi	on and/or fa	Isification of this		60011			21-075-60	<u> </u>	
	n may result in f				1	vell (after compl	etion)			
					oil	<del> </del>		<del></del>		
	copies within 60					ne & number			·	
🔀 Part 61	15 Oil/Gas Well	Part 62	5 Mineral Well		West E	lay Boyd #2-2	27			
Name and address of West Bay Explored 13685 S. West B Suite 200, Traver	ation ay Shore Driv									
Directionally drilled (C			ermit numbers		Total de	oth of well	<del></del> -			<del></del>
Yes No		1701.000 p			M.D. 48		T.V	'.D. 4483'		
Surface location		_			Subsurfa	ice location (if di	rectionally di	illed)		
SW 1/4 of SE 1/4	of SW 1/4 See	ction 22	T4S R	2E	SE :	4 of NE % of	NW %s	ection 27	T4S	R 2E
Township		County			Townshi	p		County		<del></del>
Napoleon		Jackson			Napole	on		Jackson		
Foolages: North	n/South	1	Easl/West		Footage	s: North/So	outh	1	East/West	
_		40° Et froi	m West line	of Sec	963'	Ft, from North		264' == 4		line of Sec.
FI, IIONI 301		oil/gas wells	ii 11030 mile (	J. UEL,	303	TI, HOULTNOTH			Ditt 44.69(	MICOLOGC.
Date well completed	Producing fo		Injection forma	ation(s)	Date of f	irst injection	Disposal fo	mineral wells	Solution	formation(s)
D&A	D&A	,		(-)						(-,
	—,, <u> </u>		COMP	ETION	INITED	/AL \$/\$)	<u> </u>			
			COIVIP	LETION	INIER	VALS(S)				Open
Date	Number hol-	es		Perfora	ation or or	en hole interval			Yes	No
3/11/10	52		2-4605							- x
3/15/10	28		7-4514							\^ x
3/13/10	20	430	-4014							<del></del>
	<u> </u>									
		ļ	STIMULATIC	N BY A	CID OR	FRACTURIN	G			
Date		Interval	treated				Materials and	d amount use	d	
3/12/10	4592-4605				500 ga	1 28% Hcl ac	id			
3/15/10	4507-4514					I 28% Hcl ac				
07 107 10			<del> </del>		1			······································		
					1	·····	<del></del>			
									· · · · · · · · · · · · · · · · · · ·	····
				· · · · · · · · · · · · · · · · · · ·						
				····						
					<del>                                     </del>		· · · · · · · · · · · · · · · · · · ·			
	<u></u>									
			PRO	DUCTIO	N TEST	DATA				
Oil	Gravity		ondensate		as	Water		H₂S	В.Н	P. and dept
Bbls/day	°API		Bbls/day	MC	F/day	Bbls/da	у (	Grains/100 ft <sup>3</sup>	-	
0						100				
~										
CERTIFICATION " stated herein are tr	l state that I a ue, accurate a	m authorizend comple	ed by said owr te to the best o	ner. This	report wa	as prepared ur	nder my sur	ervision an	d direction	n. The fact
Name and title (print of		00///p/0	Signature	//	1/	<del></del>		I Data	<del></del> _	
	√ (λhα)		Jighature	Correct	にしょん	1.		Date	9/00	e/ /-
Timothy L. Baker			0.55105 35		1/1				7/20	10
	Su	bmit to:	OFFICE OF				NITAL OLIA	L )T\(		
			PO BOX 302		MENT OF	ENVIRONME	NTAL QUA	LHY		
			LANSING MI		756					
			ELTROPING WIL	マレンシンプー	100					

EQP 7130 (rev. 8/2004)

F3	e e	
EL P	B2 62 8	

DECI	MICHIGAN	I DEP. MENT OF ENVIRONMENTAL							
	RECORD OF W	ELL PLUGGING	Permit numb	er V	Veli name and	number			
	OR CHANGE OF	WELL STATUS	60094	\	<b>Nest Bay B</b>	oyd #2-27			
	<b>0</b> 11 0 10 = 0.		API number						
R	equired by authority of Pa	art 615 Supervisor of Wells or	21-075-60011						
		ct 451 PA 1994, as amended	Name and address of permittee						
_		Isification of this information	West Bay Exploration						
	may result in fines	and/or imprisonment.	13685 S West Bay Shore Drive						
		-	Suite 200,						
Part 61	5 Oil/Gas Well	Plugging	Traverse (	Dity					
Part 62	5 Mineral Well		Mi. 49684						
Name and ac	idress of contractor/servi	ce company	Type of well			Field name			
McConnell	& Scully		Oil \$ Gas			1			
146 W. Ma	ain St.		Surface loca	tion					
Homer, Mi	•		SW 1/4	SE 1/4	SW1/4	Sec 2🛴	T 4S	R 2E	
49245			Township			County			
			Napoleon			Jackson			
			Date pluggin	g/change s	tarted	Date plugg	ing/change	completed	
			05/14/10			05/21/10			
DEQ employe	ee issuing plugging perm	it or approving Change of Well Status.				Date iss	ued		
Walt Dany			05/03/10						
Any chang	e of well status whic	h results in a change of production	on or a chai	nge in inje	ectivity mus	t include p	roduction	1 or	

injection test records. All records must include a narrative or daily chronology and signed certification noted on reverse.

			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
				(Hole	WELL PLUGGING conditions after plu				
		<u> </u>		(1.0.0	CASING	- <del>99" (9)</del>			
	Casing size		Where	set	Amount cas	ina pulled	Depth casing cut/per	fed: or windo	ws milled
11 3/4"			424		0		NA		
8 5/8"			3417		0		NA		
5 1/2"			4842		0		window milled to	facilitate la	teral
					<u> </u>		under permit # 60		
					PLUGS				
Dep	h of plug	,	Make and type I bridge or plug	I .	nent plugs: type, ount of cement &	Additives,type and percent	Volume and types of spacers/flushes	Wait time	Tagged Top?
Bottom	Тор	1		<u> </u>	mix water				Y/Ņ
4571	4570	Bake	erl	Mechanic	al				У
4322	4321	Bake	∍r	Mechanic	al				У
									<u> </u>
		<u> </u>						ļ	
		ļ	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
			<del></del>	<u> </u>					
					wellbore. If so, describe	materials fully in the	Daily Chronology sect	ion on revers	e.
Check	if cores were	taken an	nd attach core desc	criptions					

Mail completed original and three copies to the appropriate DEQ district office within 60 days after completion of plugging/change of a Part 615 oil/gas well or within 30 days of a Part 625 mineral well.

OFFICE OF GEOLOGICAL SURVEY MICHIGAN DEPT OF ENVIRONMENTAL QUALITY PO BOX 30256 LANSING, MI 48909-7756

COMPLETE BOTH SIDES

API num 21-075-6		<del></del>	. –			Permit numb	er			
			<del>, , , , , , , , , , , , , , , , , , , </del>	CH	ANGE OF W		IS	the state of the s		
Change w	as to:	Convert curren Production Disposal Secondar Storage Other	n .	Remed	tiate well: erf and test exist epair casing/cen	F ing zone nenl	Olugback New Disp	andary recoven age	ne Negrizo	ntal drain hole sed casing rearn open hole
<u></u>				Wells	asing record -	BEEORE ch		71		
Ca	sing	Ce	ment	176110	Perforati		ange			
Size	Depth	Sacks	Туре	From	То	If plugged, h	HOW?	Acid	or fracture treatm	ent record
11 3/4"	424'	150/150	lite/A							
8 5/8"	3417'	650/200	lite/A	4500						
5 1/2"	4842'	75/150	Halcm/A	4592	4605	<del></del>		500 gal 289		
ļ	<u> </u>	\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	)	4507	4514			500 gal 28°		
	sing		recora - Ar ment	ER change	e (Indicate add Perforat		nanges (	oniy, completi	e test record)	
Size	Depth	Sacks	Туре	From	То	If plugged, I	HOW?	Acid	or fracture treatm	ent record
	<del> </del>		<del></del>	4592	4605	CIBP				
ļ				4507	4514	CIBP		, , , , , , , , , , , , , , , , , , , ,		
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>		in the second	<u> </u>		
			RE CHANGE	1-1-1-6		<del></del>			CHANGE	· · ·
Total dept	1	ompleted Fm	Well comp			Total depth		npleted Fm ick River	Well completed :	ior
4842 BOPD		lack River CFGPD	Oil & GA		essure	4583 BOPD		FGPD	Oil & Gas Inj Rate	Pressure
0	] 'V'	Ci Gi D	111111111111111111111111111111111111111	]''	C3307 C	200	98	, 6, 5	, ny reac	460
-		AILY PRODUC	TION TEST R	ECORD				EST RECORD	☐ Injection well	
<b></b>	Oil	Water	Gas		essure		Bbls w		Pressure	Specific gravity
Date	(bbis)	(bbls)	(Mcf)	Tubing	Casing	Date	or Mcf	gas Begii	nning Ending	of water
5/25/10	231	0	68	520	620					
1	178	0	96	482	688	<b>-</b>	-			
5/27/10		0	100	492	690					
5/28/10		0	100	460 457	691 688	<del> </del>	·	<del></del>		
5/29/10 5/30/10		0	100	453	688	<del> </del>		<del></del>		
5/31/10		0	100	447	688	1		<del></del>		<del></del>
3/3 1/10	100	10	1100	<u> </u>		<u> </u>	=			
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				DAILY CHR	ONOLOGY	· · · · · · · · · · · · · · · · · · ·			
Describe in left in hole	detail the da and any logs	ily chronology o run Include di	of change/plugg ates pits filled, s	ing, include our arface restor	days shut down. ed etc. Use addi	Describe excep tional pages as	itions to is needed.	sued plugging in	nstructions. Describ	e tools, tubing, etc.
Date	Narrati									
5/14/10	MIRL	set CIBP @	D 4321'							
0711110				10 under p	ermit # 6009	4			•	
	land I	ateral at 42	67', 2140' S	outh of su	rface and 82	4' East				
ĺ	ТОН	Run lbg lo	T.D.							
5/21/10	Test '	Well								
ļ	-									
NOTICE	Inder Part F	15 Supervisor	of Wells or Pa	ert 625 Mine	ral Wells. Act 45	1 PA 1994, as	amende	d, a well owner	has continuino lia	bility for the integrity
of a pluggi	ed well. ATION "I sta	ate that I am a		aid owner.					ection. The facts s	
Name and	title (printed	d or typed)	er -Oper		Autho	prized signature	11/	11	7 1	Dale
Tim	orny L	Dan	er -Oper	ations 1	791	I WA	7)	- C 4-P		D/21/10
NOTE: Bo	nds cánnot	be terminated	until plugging	is completed	t, céllar, rat and	mouse holes,	and pits	filled, site level	ed and cleaned an	d records filed.

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY REC( D OF WELL DRILLING OR DEFF LING

	,			is or Part 62	5 Mineral Wel n may result in	ls, of Act 45	1 PA 1994	, as	1		Deepenir	ng numb	er	
антепцец. Т	OH-SUMHISSION	4 9110/01 1912	rication of th	iis iiilomiatio	n may result it	API numbi	•	nem.	6009	4				
(Su	bmit 3 copies	within 60 c	lays of drill	ing completi	ion.)	21-075-6								
•	,		•	,	•		and numb	er						
	art 615 Oil/O		☐ Part 6	25 Minerai	Well	West Ba	y & Boyd	#2-27 H	ID 1					
	Exploration					SW 1/4		1/4 of	SW 1/4	Section	22	T4S	R2E	
	Vest Bav S					Township				County				
Suite 200	103( Dat 0	11010				Norvell				Jack <u>so</u> j	n			
	City Mi. 496	84				Foolages	Nor	th/South		<u> </u>	East	West		
	dress of drilling		<del></del>	· <del></del>		186' ft	t. from S	line	and 14-	40' ft. f	rom W	line	of sec	<b>.</b>
Advanced	Energy Ser	vices				1	lly drilled (c	heck one)		Previous	permit nu	ımbers		
P.O. Box 8	35					⊠ Yes					·			
South Boa	rdman Mi.					1	e location (		•	•				
49680					<del></del>	NE 1/4	of SE	1/4 of	NW 1.	/4 Section		T 4S	R 2	E
Date drilling	began	į		g completed		Township				County				
05/15/201			05/21/20 Formalian			Norvell	21	45/0	·	Jacks		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		····
Total depth o		^		at total depth		Footages		th/South	00	EG! ". •		West		_
Driller 5102 Elevations	Log N	Α	Black Riv	<u>ver</u>		1590' fi	t. from IN d - cable to			56' ft. f	rom VV ed - rotan		e of sec	<u>.                                    </u>
K.B. 1042.6	. H DE	£+	ат, 1041	fi Cra 1	029.2 ft	from		0	f	reecumin from SU		y toois to 1	rn	
N.B. 1042.0	J. II. K.J.		7.1, 1041	76, 010 1	025.2 It	11011		<u> </u>		noin su	··· <del>··</del>	10		
Casi	ng, Casing Li	iners and C	omenting (	Operating St	rings		Mater	Fill Up (F.)	L) or Lo	et Circu	lation (I	C 1 (X)		
Size	Where set		ment	T.O.C.	Ft. pulled	T	Formation	7. 1) qo 11;	F.U.	L.C.	Depth	,	mount	
11 3/4"	424'	150 lite		surface										
8 5/8"	3417'	650 lite		surface		1								
5 1/2"	4842'	75 Halo		3300"										
		150 Ha		1										
		(PN 60												
				<u>-</u>			····							
		Pay Interve		1		All O	ther Oil an	d Gas Sho	ows Ob				<del></del>	
	ation	Oil or Gas	<del></del>	To	Forma	V	0:1		ļ <u></u>		nere Obs	<del>,</del>	<del></del>	Lew
Black Rive	<u></u>	both	4310'	5102'	roima	HOTI	Oil or Gas	Depth	Sam-	Odor	Pits	Mud Line	Gas Log	Fill   Up
				+			Gas	<del> </del>	ples	Odor	FILS	ritté.	LOG	Op
				1	<del></del>	<del></del>	ļ ·	<del> </del>	<del> </del> -	<del></del>	<del></del>			<del> </del>
		<del>                                     </del>	<del></del>	-			<del> </del>		<del></del>					<del> </del>
		<u> </u>		للــــــــلــ							<u> </u>	L		
	Depth Cor	rrection			Deviati	on Survey				Plu	igged Ba	ck		<del> </del>
Dep			ction	F	Run al		egrees	Yes	s No		<u>.9.9.;</u>	Depth		
see		attached		direction	nal									
<u> </u>														
					·	<u> </u>								
										·				
				Geophysic	cal / Mechanic	cal Logs (lis	st each type	run)						
	Brand				Log types					Logged	intervals			
Unable to	run logs in l	ateral	<u> </u>	<del></del>					<del></del>					
				J										
Malica: Day	d complete se	mple and fo	rmation rec	ord coring re	cord, and drill	etem leet in	formation :	n revers	eido	·				
CERTIFICAT	ON "I state t	hat I am aut	horized by s	said owner T	This report was		·			ction Th	e facts st	ated he	rein are	true,
	complete to the		<del></del>	e. 			-1-2-					<del></del>		
Date	1	lame and til					Sig	gnature	En 18	1	[ [6]			
06/22/2010	)	imothy L.			DLOGICAL SU	(BVEV		41	not		1 for			
		Submi			T OF ENVIRO		QUALITY			7				
EOP 7200-5	(rev. 8/2004)				LANSING, MI				-					

FORMATION REC	`QD
Altach additional sheets if no	₃sary
Geolog	ist name

API number

Permit number/Deepening number 60094

Elevation used 1043

Tops taken from

Fowler/Baker/Vancycle

Sample log Driller's log

Electric log

		Formation			Formation
From	То	(lype, color, hardness)	From	То	(type, color, hardness)
		lled, add true vertical depth formation tops			
where appro	222(log)	Drift- Unconsolidated sand and			
surf	222(109)	gravel		ţ.	
222	290	Shale& Siltstone- brn-gy-Grn, silty			
	1000	at top organic at base		į	
290	1230	Shale-Coldwater- Md-dk Brn- Blk,Silty, incr organic at base			·
		Bitt, Sitty, more against at East			
4.220	1370	Sunbury Sh/Berea siltstone-Sh, Md	: 		
1230	1370	Brn-Blk Silty,pyr. mixed w/siltstone,			
		SSO-Lt md brn, Arg			
1370	15	Antrim-Dk Brn-Blk,Pyrand incr organic at base,SG incr toward			
		base			
1554	1622	Traverse Fm- Limestone, Dk Brn-			
, ,	[	md Brn, Dns, Pyr, Dolomite, Md Gy-			
4000	1744	Gy, Dns Traverse Limestone-Md Brn-lt Brn			
1622	1737	VfxIn,Hd,			
1744	1978	Shale intbd w Dolomite and Lmst,			
		Md Brn-Gy, Vfxln, Dns, Pos Dundee@1728'-Brn-Lt brn,Poor			
	ļ	Samp, Pos Cvgs			
1978	2200	Detroit River- Anhydrite and			
	j	Dolomite/Limestone, Lt-Md Brn			
2200	2416	Dns,VfxIn in pt,NS Bass Island/Bois Blanc-	, ,		
2200		Dolomite, Anhydrite & Limestone AA			
2416	2685	G-Unit-Dolomite-Arg,Hd grading to Anhydrite- Lt-md Gy Brn			
2685	2766	C Shale-Gy-rdBrn, W/Dolomite and	·		
2000		Anhydrite,Lt gy-Brn-bf Poor Samp.l			
2766	2972	B Evap-Anhydrite Wh-Lt Gy	If well	was cored, attach cor	re description
	;	W/Dolomite-Vfxln, Lt-md Gy, Intbd at base with Anhy. AA			
2972	3160	Doto &Limst-Wh-lt	<del></del>	DRILL STEM TEST	DATA
2912		Gy, Dns, Anhydritic @3110-Wh, Dns			
3160	3386	Niagaran-Dolomite,AA,Md Gy, VfxIn			
		Intbd W/Anhydrite AA,V porous 2880'-3300'			
		2000-3300			
	5				
3386	3884	Clinton/Cinn-Dolomite, Arg, hd, dk	 		
0000	l	gy, grd to it gy intbd w/Lmst,it-md gy	: !		
	4212	Dns Lities Shale Gy Gra Gummy Hd	ł		
3884	4212	Utica- Shale, Gy-Grn,Gummy-Hd Trenton-Dolo, Lt -Md Gy,Dns,W/	  -  -		
4212	4526	Lmst @ 4236'-4526' Lt-Md Gy	  -  -		
		Brn,Vfxln,			
4526	TD	Black River- Dolomite, Md Brn-			
	Under PN	GyBrn,SO&G@4590'	; ; ;		
	60011		l V		

4311	5102	discriptions of rock cuttings after drilling windc Dolomite- Lt Gy - Lt Brn, fxln,so &G, G cut & Flu ,Tr Frac,Partial loss of returns	
	<b>,</b>		·
			LIST ATTACHMENTS
		\	
			OFFICE OF GEOLOGICAL SURVEY USE ONLY Reviewed by
			Date of review
			<u> </u>

Directional Drilling Contractors, LLC

Job Number: DR100134

Company: WEST BAY EXPLORATION

Lease/Well: WEST BAY/ BOYD 2-27 HD1

Location: NORVELL TWP., JACKSON CO.

Rig Name: MCCONNELL & SCULLY

RKB:

G.L. or M.S.L.:

State/Country: MICHIGAN / USA Declination: 6.37 DEGREES WEST

Grid:

File name: C:\WINSERVE\PENDING\2010\BOYD227.SVY

Date/Time: 24-May-10 / 12:20

Curve Name: WEST BAY/BOYD 2-27 HD1 ( as drilled )

# Directional Drilling Contractors SURVEY REPORT

## WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method Vertical Section Plane 158.94 Vertical Section Referenced to Wellhead Rectangular Coordinates Referenced to Wellhead

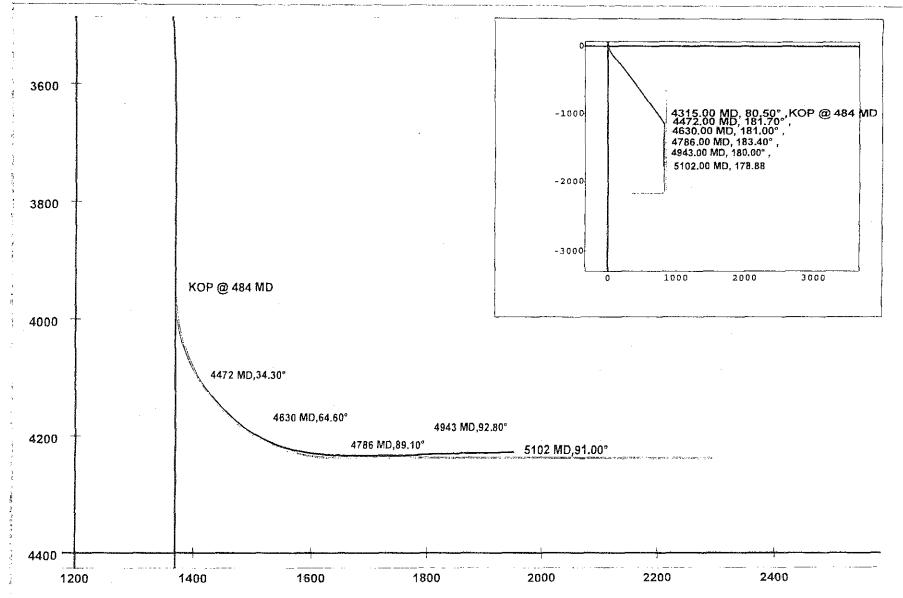
	Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O : Distance FT	S U R E Direction Deg	Dogleg Severity Deg/100	
	KOP @ TI	E @ 4315	MD								~ ]
. ;	4315.00	.30	80.50	3953.37	-1149.29	825.53	1369.17	1415.05	144.31	.00	
-	4346.00	5.20	164.10	3984.33	-1150.63	826.00	1370.59	1416.41	144.33	16.69	
	4379.00	11.30	164.50	4016.97	-1155.19	827.27	1375.30	1420.86	144.39	18.49	
	4409.00	18.00	173.60	4045.98	-1162.63	828,57	1382.72	1427.67	144.52	23.55	
	4440.00	25.90	180.70	4074.72	-1174.18	829.03	1393.66	1437.36	144.78	26.84	
	4472.00	34.30	181.70	4102.38	-1190.21	828.67	1408.49	1450.28	145.15	26.30	
	4503.00	40,00	181.70	4127.08	-1208.92	828.12	1425.75	1465.35	145.59	18.39	
	4535.00	45.80	181,70	4150.51	-1230.68	827.47	1445.83	1483.00	146.08	18.12	
	4567.00	51.30	181.40	4171.68	-1254.65	826.83	1467.96	1502.59	146.61	17.20	
	4598.00	57.90	180.70	4189.63	-1279.90	826.37	1491.36	1523.49	147.15	21,37	
	4630.00	64.60	181.00	4205.01	-1307.94	825.95	1517.37	1546.90	147.73	20,95	
	4662.00	72.30	183.10	4216.76	-1337.66	824.87	1544.72	1571.54	148.34	24.82	
	4693.00	79.20	184.90	4224.39	-1367.61	822.77	1571.92	1596.03	148.97	22,96	
	4722.00	83.30	184.50	4228.80	-1396.17	820.42	1597.73	1619.38	149.56	14.20	
	4754.00	86.60	184.50	4231.61	-1427.94	817.92	1626.48	1645.61	150.20	10.31	
	4786.00	89.10	183.40	4232.81	-1459.84	815.72	1655.46	1672.28	150.80	8,53	
	4817.00	89.90	182.40	4233.08	-1490.80	814.15	1683.78	1698.63	151.36	4.13	
	4848.00	89.60	180.70	4233.22	-1521.79	813.31	1712.40	1725.49	151.88	5.57	
	4880.00	90.20	180.00	4233.28	-1553.79	813.12	1742.19	1753.69	152.38	2.88	
	4911.00	92.70	180.70	4232.49	-1584.77	812.93	1771.04	1781.11	152.84	8.37	
	4943.00	92.80	180.00	4230.96	-1616.74	812.73	1800.80	1809.52	153.31	2.21	

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O : Distance FT	SURE Direction Deg	Dogleg Severity Deg/100
4974.00	91.40	179,30	4229.82	-1647.71	812.92	1829.77	1837.34	153.74	5.05
5036.00	90.70	178.20	4228.68	-1709.69	814.28	1888.09	1893.69	154.53	2.10
5092.00	90,95	178.88	4227.87	-1765.66	815.70	1940.84	1944.98	155.20	1.29
PROJECT	ED TD @	5102 MD		•					:
5102.00	91.00	179,00	4227.70	-1775.66	815.89	1950.24	1954.13	155.32	1.29

Job Number: DR100134
Company: WEST BAY EXPLORATION
Lease/Mell: WEST BAY/ BOYD 2-27 HD1
Location: NORVELL TWP., JACKSON CO.
Rig Name: MCCONNELL & SCULLY
State/Country: MICHIGAN / USA

Declination: 6.37 DEGREES WEST File name: C:\WINSERVE\PENDING\2( Date/Time: 24-May-10 / 12:17







# MICHIGAN DEPART IT OF ENVIRONMENTAL QUALITY - OFFICE OF

OLOGICAL SURVEY

# RECORD OF WELL COMPLETION

<b>_</b>					Permit nun	nber/deepenir	ng permit no.	API number	r	
	of Part 615 or Pa Non-submissio				60094			21-075-6	0011	
	n may result in fin					ll (after comp	lelion)			
/A	na=1		-111		oil					
	copies within 60 15 Oil/Gas Well			i	Well name		92 HD *			
Name and address of		ا ۱ م ۱۱ ۵۰	AU MINICIGI AAGII		west Ba	y Boyd #2-	2/ HU 1	<del></del>		
West Bay Explora										
13685 S. West B		е								•
Suite 200, Traver	se City Mi. 490	684								
Directionally drilled (c	check one)	Previous	permit numbers		Total dept					
Yes No			· .		м.р. 510			/.D. 4228'		
Surface location					i	e location (if c	•	=		
	of SW 1/4 Sect		T4S R2	E	NE ½	of SE 1/4 c	of NW 1/4 S		T 4S	R 2E
Township	i i	County	2		Township	n.		County		
Napoleoni		Jacksor		·	Napoleo		`a.ub	Jackson		
1	n/South	At makes	East/West	FCn-	Footages: 1590'			DEG! =- 1	East/West	lina a f O:
186' Ft. from SOI			om West line of	Sec.	1590	Ft. from Nort			om West	nne or Sec.
Date well completed	Part 615 - oil Producing for			ion(s)	Date of fire	st injection	Disposal fo	mineral wells rmation(s)	Solution for	ormation(s)
oil & Gas	Black Rive		1	-1-7		.,====	1	==(0)		1.40)
<u> </u>			_1				<del>-1</del>		<del></del>	
			COMPL	ETION	INTERV	ALS(S)				
										)pen
Date	Number holes			Perfora	ation or ope	n hole interva	<u> </u>	··	Yes	No
5/25/10	open hole	431	1-5102'						x	
							<u></u>			
					<del></del>				<del></del> _	<del> </del>
										<del></del>
		_	OTIMAL ATION		OID	D & 071151	10			
D-1-	1		STIMULATION treated	A BA VO	JID OR F	RAC TURIN		d amount use		
Date	<del></del>	merva	i irealeu		<del> </del>		iviaterials aff	d although rise		
							· · · · · · · · · · · · · · · · · · ·			
<del> </del>										<del></del>
<u> </u>						<del> </del>			-	
<u></u>		·	·		<u>L</u>			<del></del>		
			מפתר	אוורדות	N TEST I	7 V T V				
Oil	Gravity		Condensate		as	JATA Wate	r	H <sub>2</sub> S	TAH	P. and depth
Bbls/day	°API		Bbls/day		F/day	Bbls/da		Grains/100 ft <sup>0</sup>		uno dopui
200	43	_		98			<del></del>	<del></del>	<del>-</del>	
200	. 5									
CERTIFICATION '	'I state that I am	authoriz	zed by said own	er. This	report was	s prepared u	ınder my sur	pervision an	d direction	. The facts
stated herein are tr		nd comple		f my kno	wledge."					
Name and title (print			Signature	1000	4-7	1/3/2		Dat		
Timothy L. Baker				1100	1	-6		05/	30/10	
	Sub	mit to:	OFFICE OF G				ENTAL OLIA	J. ITW		

PO BOX 30256

LANSING MI 48909-7756

121	45	LA	DD

# MICHIGAN DEPARTMENT OF PUBLIC HEALTH

	W	7671
PER	MIT NUM	BER

( ) CUPATION OF THE TRIES						
LOCATION OF WELL	Township Name	Fraction		Section	Town Number	Range Number
JACKSON	NORVELL	SE 14	NE 1/4 NE 1/4	27	4 5	2 €
istance and Direction From Road Intersection 12148 LADO BROOKLYN MI 49230	xi		3 OWNER	12148	RT A. BRISTLE LADD KLYN MI 492	30
treet Address City Of Welt location						
ocate with "C" in Section Below	Sketch Map	2	4 WELL DE	PTH: Date	a Completed	
<u> </u>	CASE RD		1	8 <b>9 f</b> t.	8/6/99	NEW WELL
ANFIGLIFF	2	77.E	5 DRILLING	METHOD:	ROTARY	
w   100		15	6 USE:		DOMEST	IC
5	LADD RD	l S	7 CASING:	PLASTIC		
	1 1/4 tends	⊗ HARDCASTL		Diameter 5" to 173	ft. depth	Height: ABOVE Surface 1'
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	I LEMES WAND			•	1	
1 Mile	Longitude: WAMPLE	RS		Grouted Drill Hole D	Diameter	Weight SDR 21
	THICKNESS	DEPTH TO	1	9" to 173 ft. depth		
2 FORMATION DESCRIP	IION OF STRATUM	BOTTOM OF STRATUM				Drive Shoe?
SAND	20	20	8 SCREEN:			
YELLOW CLAY	8	28	***************************************	Type: NONE	Diamet	er * Nominal
GRAY CLAY	24	52	1			
GRAVEL	3	56				
GRAY CLAY	112	167	FITTING	<b>3S</b> :	•	
SAND ROCK	21	188	9 STATIC V	VATER LEVEL:		
CAID NOOK			52 ft.	below land surface		Flow?
PUMPING LEVEL				LEVEL: below la	nd sudare	
EST WITH AIR			1			
100+ GPM			52 π.	after 2 hrs. pumpin	g at 12 G.P.M.	
			11 WELL HE	AD COMPLETION	PITLESS	ADAPTOR
Dramin	170 0 0		12 WELL GF	OUTED?		
RECEIVE	D SEP 0 9 1899		EZ S	EAL From 0 to 173	ft.	-
	K L C	<b>美国的</b>	19 b	age of cement.		
	MICH DEPT OF FIN	in, i rafia (d. C	[[t]] Y	SOURCE OF COL	MOTAMINATION	. <u> </u>
	001	0 8 1999	Well	SEPTIC Distance disinfected upon co Vell Plugged?		18
	Drinking Muser & J	turcelis el constitu	Dunien			
		Mors Silv Is Sedim NSTRUCCION UN	,	anufacturers name		A
CRIBLEY OFFICE NOTES	MATICOA	(4111636 11611 013	L	iodal number 75CN: angth of Drop Pipe 7	75 ft. capacity 1	
			PRESSI	ype SUBMERSIBLE JRE TANK:		
WELLS AWC 5-1 1" F	PVC 75		1	lanufacturere Name	•	
CDCW14574P18609			N	lodel Number VVX 2	02 Capacity 8.2	Gallons
15 REMARKS, ELEVATION, SO NO LINER	URCE OF DATA, ETC.			ACTOR'S CERTIFIED ACTOR BY INTERPRETATION AND THE COMMENTS OF THE COMMENT OF THE	•	e best of my
		_	Cribley Drilli	ne Co., Inc.		81-0524
17 RIG OPERATOR'S NAME	KENPEARCE		REGISTERED BU	SHESS NAME	REGIS	TRATION NO.
17d 2/89		! _ <u>•</u>	igned: State	& a. C	ande	1. Dexiai, Nº 48134 Dete: 8/17/0
			() AU	THORIZED REPRESENT		
IMPORTANT: File with deed.	GEOLOGICA		$\vee$ ,	THORIZED REPRESENT Authority; Act 368 F Completion: Required	PA 1978	

3- 981 - 1901 TAX NO:	DRINKING WATER			P RECOR	3 8	PERMIT NO:	**************************************	
	Completion is requi		hority of Pa	rt 127 Act 368			10	
LOCATION OF WELL County	Township Name	iure to comply	Is a misue Fraction	nreanor	Section No.	W - 4/		VA.
JACKSON	NORVELL.			F145W114	Section No.	4/5	Hatilge I	
Distance and Direction from Road					FWELL LARI	WARRY COMMISSION OF THE PROPERTY OF THE PARTY OF THE PART	AND THE RESIDENCE OF THE PARTY	
IN MILE EA	STOF BETTES OF OF LADD RD.	Hwy,		Address	1216	O LADD	Řδ.	
ON NISEDE	FOF LADD RD.					KLYN, MI		
Street Address & City of Well Loc				Address S	same as Well Loc			
Locate with 'x' in Section Below	\$	Sketch Map		4. WĘLL DĘI	PTH: Date 6		New Well Replacement We	oll
		. في السيس		5. Cable	Tool 🙀 R	olary 🗀	Driven Du	<b>ე</b> მ
	\$ ×~				Household 🔲 T	ype l Public 🔲		
	LADD /	८⊅			Irrigation T		Heat Pump	<del>-</del>
1/4/		-		7. CASING:	Steel T		oight: Above/B <u>elo</u> irlace:	- Autorities
2. FORMATION DESCRIPTION	- NALLOCALISTON	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	Diameter	Othorin. to		•	
51.0		~ ~~	27		5In. to /	2811. depth		_105711
SAND.		64	91	BORE HC Diameter	ALE: : <b>8</b> , in to /	1 ==	Drive Shoe Shalo Packer	
CLAY		67	103			ft. depth		
GRAVEL + CLAY		10	1	8. SCREEN: Type:	Not Installed	i <b>X</b> JGravel- Diam	Packed eter4_//	
DAND & GNACE			114	SlowGauze		reug	In:	
			<del> </del>	FITTINGS		er LIBremer	Check	
	7 Ca			□Blank	Above Screen	ft. Other	THOUTADE	)/L
	FILE				VATER LEVEL: it. Below Land	Surface	Flowing	
52.4	11/1/2/			10. PUMPINO	3 LEVEL: Below t	and Surface		
# 100 POLICE	in test		<u> </u>		tt. Aftera	hrs, Pumpir	Test Pu	a.P.M. Imp
		+	ļ <u>.</u>	]	AD COMPLETION	_		
				<b>-</b>   <b>₹.3</b> ,	s Adapter ment Offset	<del>* -</del>	oove Grade House	
	TH U		<del> </del>	12. WELL GF			rom	28
			ļ	Neal	Cement 📝 📈 🛭	Bentonite [	Other	
G 70 G	<u> </u>			No. of Bag		Additives B		
			Temporary production and		T SOURCE OF PO			واسين
1464 - 2145 - 21	CELIC NEEDED		<u> </u>	Lype 2	EPTIC DI	stance	ft. Direction	
USE A 2ND SH  15. ABANDONED WELL PLUGG	EET IF NEEDED  EED?		I	14. PUMP:	Not Installed	d Pump		
Casing Diameter				Manufacii Model Nu	rer's Name	ERS	ル <sub>ン</sub> Volts コ	 3ው
PLUGGING MATERIAL:	Neat Cément	Bentonite	-	Length of	mber TSI	nt. Capa	city 10	G.P.
Cement/Bentonite Sturr	y Concrete Grout Casing Removed?	Bentonite Ves		TYPE:	Submersible	Jet 🗆 (	Other	
16. REMARKS: (Elevation, Sou		PMS laws		Manufact	rer's Name []			
		18 WATER	LIWELL CONT	TRACTOR'S CE	niger WK-DO	Capacit	Y_Q_O_Gallions	·
		This we	ili was drilled	undor my Juris	diction and this re	port is true to the	e best of my,	
17. DRILLING MACHINE OPER		VIJOMIS	sge and belia	 ایهدر <یمما د	INC,		2039	
K Employee Subcont	ractor	REGISTER	EC BUSINESS NA	AME	د ر دهسسه	16 110	REGISTRATION NO.	).
Name LHARLES A	TORNOW	Address	J/68	M-50	TIPTON			
		Signed_	ALL PARTY	AZED DESPERANTA	WE HOOL	Date (	5-20-98	?

michigan Department of Environmental quality

GEOLOGICAL SUNTY NOO 1984

# MICHIGAN DEPARTMENT OF PUBLIC HEALTH

# PERMIT NUMBER

1 LOCATION OF WELL		PART 127	ACT 368, P.A.	1978
County Jackson	Township Name Norvell		SW 1/4 S	$H_{1/4}$ SE $_{1/4}$ (22) $\mathcal{J}$ T4S $_{N/S}$ RŽE $_{E/W}$
Distance And Direction From Road In 1/2 mi B Bettis & La	nersection dd Roads			3 OWNER OF WELL:
12180 Ladd Rd	and Monard		Mulus	Address Brooklyn, MI 49230
Street Address & City of Well Location	20		1,-	Address Same As Well Location? Tyes No
Locate with "X" in Section Below		otch Map:		4 WELL DEPTH: (completed) Date of Completion 1.80 ft 11/30/83
W	Bettis Ladd	*		Cable tool   X Rotary   Driven   Durg     Hollow rod   Auger   Jetted       6 USE: XX Domestic   Type   Public   Type   New Public   Type   New Public   Heat pump     Trest Woll   Type   New Public   Height   Above/FREEX
1 MILE		<del></del>		Plastic Welded   Surface 1
2 FORMATION DES	CRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	Grouted Oriff Hale Diameter
Sand and gravel		23.	21	8 in to 156, ft depth   Drive Shoe
Sand, gravel and sh	ale	89	1.10	8 SCREEN: XX Not installed  Type Diameter
Dirty shale, sand a	nd gravel	24	134	Stot/Gauza Length ft
Sand, gravel and sh	ale	14	148	FITTINGS K-Packer Lead Packer Bremer Check Blank above sciech 1. Other
Sandstone		32	180	9 STATIC WATER LEVEL:
				10 PUMPING LEVEL below land surface Flow
				11. atter 1 hrs. pumping at 15 G.P.M.
				11 WELL HEAD COMPLETION Basement offset Approved pit
				12 WELL GROUTED? No X Yes From 1 to 156 ft
		-		Nost coment X Bentonite ( ) Other
				No. of bags of coment. T. Additives
	一代社会和特殊工作			Type
Mica.	Dopt. of Postin Man	<u> </u>		Well disinfected upon completion?   Yes No
	JUN 7 1904			14 PUMP: X Not installed Pump installation Only
Duron	t of Environmental a			Manufacturer's name HP Volts
	rational Health GWQ			Length of Drop Pipeft. capacity G P.M
				TYPE: Submersible Jet PRESSURE TANK:
USE A 2ND SHEET II	: NEGRED			Manufacturer's name
16. Remarks, elevation, source of	f data, etc		1	WELL CONTRACTOR'S CERTIFICATION:  I was diffled under my jurisdiction and this report is true
	ADDED INFO BY DRILLER CORRECTED BY	~	to the bo	est of my knowledge and belief.
8 loto	**ADDITION BY	ا معود در این استخداد در این از ا از دارد	·	Pley Well Drilling, Inc. 167 - 1517 REGISTERED BUSINESS NAME REGISTRATION NO.
$\nu$	ELEVATION DEPTH TO SHOK	₹5,6 1		6655 Brooklyn Hd., Jackson, NI 4920]
D67d (Rev. 10-80)	201416		Signed _	Relieble Date 5/14/84



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Import ID:	Failure to cor	nply is	a misden	neanor.				
Tax No:	Permit No: 11701	Coul	nty: Jacks	on .		Township:	Norvell	
		Tow	n/Range:	Section:	Well Status	WSSN:	Source	ID/Well No:
MAIL ID. 2000	nnneenn		4S 02E	27	<u>Active</u>			
Well ID: 3800	10006689	Dista	ance and D	irection fro	m Road Inter	section:		
Elevetia		.4 M	LE E OF LA	ADD RD & B	ETTIS RD			
Elevation:								
Latitude: 42.10084738		-		VEIL WELCH		1		
Longitude: -84.18260323			Address:			Owner Addr		
Method of Collection: Inter	polation-Map	121	5 LADD RD	•		305 CASS A		
						T ON ONO ON,	NII 40200	
Drilling Method: Rotary			Pump Inst			Pump Ins	stallation Only	y: No
Well Depth: 196,00 ft.	Well Use: Household		Pump Inst	allation Date	e:	<b>HP</b> : 0.50		
Well Type: New	Date Completed: 8/1/2003			rer: Aerm			pe: Submers	
Casing Type: PVC plastic	Height:			nber: A-12			pacity: 12 G	SPM
Casing Joint: Unknown				Length: 6	5.00 ft.	Pump Vo	7	
Casing Fitting: Shale packer/tra	þ			Diameter:	h Na	Drilling F	Record ID:	
Diameter: 5.00 in. to 168.00 ft. de	anth			n Seal Used Fank Installe			····	
Dismeter, 5.00 m. to 100,00 m. de	<del>-</del> 501			rank Instant Fank Type:				
				rer: Well-				
Borehole: 8,00 in. to 168,00 ft, de	epth			nber: WM		Tank Ca	pacity: 5.0	Gallons
4.75 in. to 196.00 ft. de	· ·			Relief Valve		No		
Static Water Level: 43.00 ft. Beid	, 5,			Formation	n Description	1	Thickness	Depth to
Unrestricted Flow Rate:	Yield Test Method: Test pur	ub	<u> </u>		- Bosomption			Bottom
Well Yield Test:	00 0014		Clay Sand				8.00	8.00
Pumping level 47.00 ft, after 1.00 h	irs, at 20 GPM		Sand & Gra	avel W/Stone	es		4.00 25.00	12.00 37.00
			Clay	avei		,	18.00	55.00
Screen Installed: No	Intake: Bedrock Well		Clay Sand	Gravel			31.00	86.00
Jorean Metallica	·		Sand & Gra				19.00	105.00
			Clay Sand				50.00	155.00
			Sand & Gra	avel			7.00	162.00
1			Gray Sand	stone			34.00	196.00
					·			
								<u> </u>
				····				
Well Grouted: Yes Grouting	Method: Unknown							
1	dditives Depth		Geology R	emarks:	<del></del>	· · · · · · · · · · · · · · · · · · ·	<u> </u>	1
l	one 0.00 ft. to 168.00	ft.	ocology i	cinarko.				
,	<b>3</b> .70							
Wellhead Completion: Pilless a	dapter							
	OCC	·						
Nearest Source of Possible Cont				achine Oper		TBURKHO	LDER/MSEXT	ON
Туре	Distance Direction		Employme	ent: Employ	/ee			
Septic tank	50 ft. Southwest		Cont. 1					
1		1	Contractor	r rype: Wat	ter Well Drillir	o Contractor	Reg No:	167

EQP-2017c (4/2010)

General Remarks: Other Remarks:

ATTENTION WELL OWNER: FILE WITH DEED

Business Address:

my knowledge and belief.

Signature of Registered Contractor

State of Michigan

Date

Business Name: FOX & BOLEY WELL DRILLING, INC

Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of

8/29/2003 1:16 PM



# Water Well And Pump Record



Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Tax No: Permit No: 8613 County: Jackson Township: Norvell Well Status: Town/Range: Section: WSSN: Source ID/Well No: 04S 02E Active Well ID: 38000004062 Distance and Direction from Road Intersection: 2/10 MI E. OF LADD RD. & BETTIS RD Elevation: Latitude: 42,10158183 Well Owner: HOLLIS HAMM Well Address: Owner Address: Longitude: -84,18806133 12161 LADD RD. 12161 LADD RD. Method of Collection: Address Matching-House Number BROOKLYN, MI 49230 BROOKLYN, MI 49230

Drilling Method: Rotary Pump Installed: Pump Installation Only: No Well Depth: 212.00 ft. Well Use: Household Pump Installation Date: HP: 1.00 Well Type: New Date Completed: 7/7/2000 Manufacturer: Aermotor Pump Type: Submersible Casing Type: PVC plastic Height: Model Number: A+20-100 Pump Capacity: 20 GPM Casing Joint: Other Drop Pipe Length: 65.00 ft. Pump Voltage: Casing Fitting: Drive shoe Drop Pipe Diameter: Drilling Record ID: Draw Down Seal Used: Diameter: 5.00 in. to 176.00 ft. depth Pressure Tank Installed: Yes Pressure Tank Type: Unknown Manufacturer: Well-Mate Borehole: 8.00 in. to 176.00 ft. depth Model Number: WM-14WB Tank Capacity: 14.0 Gallons Pressure Relief Valve Installed: No Static Water Level: 45.00 ft. Below Grade (Not Flowing) Depth to Thickness Formation Description Yield Test Method: Test pump Bottom Unrestricted Flow Rate: Sand & Gravel 2.00 Well Yield Test: 2.00 Pumping level 46.00 ft. after 1.00 hrs. at 20 GPM Clay 7.00 9.00 Sand & Gravel 6.00 15.00 Clay 4.00 19.00 Intake: Bedrock Well Screen Installed: No Clay Sand Gravel 65.00 84.00 11.00 95.00 Sand & Gravel Sand & Gravel 13.00 108.00 Clay Sand Gravel 22.00 130.00 Gray Sandstone 2.00 132.00 Clay Sand Gravel 20.00 152.00 Sand Gravel Clay 8.00 160.00 Sand & Gravel 11.00 171.00 27.00 Gray Sandstone 198.00 Well Grouted: Yes Grouting Method: Unknown (Continued On Page 2) Geology Remarks: **Grouting Material** Bags Additives Depth Bentonite slurry 18.00 0.00 ft. to 175.00 ft. Other Wellhead Completion: Pilless adapter Nearest Source of Possible Contamination: **Drilling Machine Operator Name:** TBURKHOLDER/HHARRIS Distance Direction Employment: Employee Type None (Continued on page 2) General Remarks: Other Remarks: Casing Joint: GLUED, Grouting Additive 1: QUICK-GROUT/BENSEAL

EQP-2017c (4/2010)

ATTENTION WELL OWNER: FILE WITH DEED

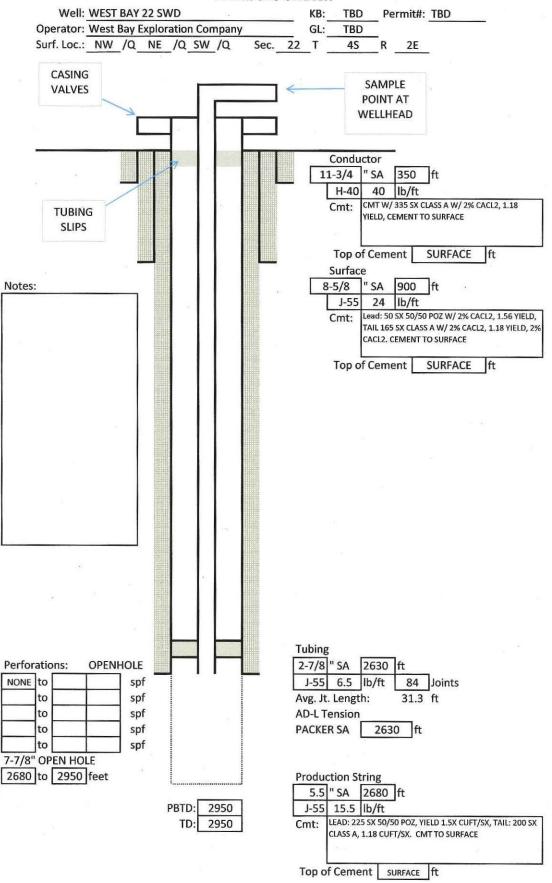
State of Michigan

10/26/2001 3:37 PM

SCOCOCICAL SURVEY SAMPLE NO.						
MAR 3 0 1973	WATER Y	WELL REG	CORD	٨	MCHIGAN DEPA OF	ARTMENT
1 LOCATION OF WELL County Township Name		Fraction			PUBLIC HEA	
Jackson Norvell		1	SW4 SW4		T4S N/S.	Rango Number REE E/W.
Distance And Direction from Read Intersections NE comer Bettis & Ladd Ro			3 OWNER OF W	ÆLL:	ter filograment aussen med er er entreppen fil til men krit tig med et blitte som	No. of the last of
•	445		OC Address 10	seph Nati 105 Lakevi	ter ew	
Ladd Road Street midress & City of Well Location			Br	ooklyn, l	<i>l</i> ichigen	
Locate with "X" in sacifor below g	Skotoh Mag:			: (nompleted) f		n
			E Cuple to	ft, of Rota		n Dug
w	-Bet	T18	Hollow re	od 🔲 jettr	nd Bored	
			1	estic Publ atlan Air (		Industry
	Ledd	<del>-</del>	Test	<del></del>		] commercial
* 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	LEI UU		7 CASING: Thr Diam.	roaded 🍞 Welduc		
	THICKNESS	DEPTH YO	4 in. 10	164 ft, Dept	Surface	
FORMATION	STRATUM	STRATUM	in. to	ft. Dopti		
Sand	15	1.5	B & CREEN:	one	D:	
				U116		
Shale and gravel	770	1.25	1	ft. and	ft.	
Shale	. 8	137	Fittings;			
Gravel	8	145	9 STATIC WATE	R LEVEL [1, below land sur		
Gravel		T#0		EVEL below land sur		
Shale	10	155	50	ft, after <b>2</b> _hrs. ;	штр ina <u>20</u>	
Gravel	6	161	ļ1	lt. ofter hrs. p	опріна	p.p.m,
			11 WATER QUAL	LITY in Parts Per	Million:	
Shale	4	165	Iron (Fe)	Chlor	idos (CI)	
Sandstone	15	180	Hardnoss	Other		
				COMPLETION: [less Adaptor		
			13 Well Grouter	d? Yes K No	JIZ MOOVO DI	140
			3	ement 🔲 Buntani		
				nft, t		
7 7 000				Direction		Туро
	-		Woll disinfed	telamon complete		
			Manufacturor	r's Name	et installed 88	yet
			ĺ	Br		
			Length of Dr. Typa: St	op Pipoft. ubnjersib)a	capacityG	.P.M.
			J=		Reciprocating	
USE A 2ND SHEET IF NEEDED						
Remarks, elevation, source of data, etc.				TOR'S CERTIFIC		
ADDED INFO, BY DRILLER, ILEM ALL		to the be	st of my knowled			
		LOX Bi	in the series of	<del>luillers,</del>	Ino REGISTRA	TAP16.
CORRECTED BY		Address	-6655 Bro	oklyn Ro	ad - Jack	son, Mich
Peaddition the		Signad	Sherry	SEENS TIVE / S	Date 9/0	20/73 4
57d 100N (Nov. 12-68)		2181100 5	AUTHORIZED REPR	ESENTATIVE	Pms	+ W-f

# Attachment "M"

# Wellbore Sketch



# Attachment "Q"

			LINITE	DOTATES	ENVIRONMENTA			Approval Expires	1/31/05	
			UNITE		/ASHINGTON, D		N AGENCY			
			DIII		AND ABAN		TDIAN			
			FLU	GGING	AND ADAN	·····				
1	Address of Fac	ility				Name and Add				
West Bay	22 SWD					West Bay Exp	oloration Com	pany		
						13685 West E	Bay Shore Driv	ve Suite 200		
						Traverse City,	, MI 49684			
			State		County				Permit Number	
,	ell and Outline	Unit on	Michiga		Jackson				<b></b>	
Section F	Plat - 640 Acres		1	cation Description				10.0	· –	
l	<u> </u>	, ,			of <u>SE</u> 1/4 of <u>SW</u>			p <u>4S</u> Range <u>∠</u>	E	
			Surface	I in two direction	ns from nearest lines	of quarter section a	ind drilling unit			
			Location	665	ft. From (N/S)	S Line	of Quarter Sec	tion		
			And	1407	- 7 ft. From (E/W)	W Line	of Quarter Sec	tion		
			TVE	C OF AUT	HODIZATION		NAVEL 1		<del></del>	<del></del>
			''	_	HORIZATION		WELL	Class I		
1				✓ Individ	dual Permit		ACTIVITY	=	zardous	
				Area P	ermit				nhazardous	
								✓ Class II		
<del>   </del>				Rule					ne Disposal	
	#								anced Recove	
			Number	of Wells	1			∐ Нус	lrocarbon Stor	age
<b></b>	: !	1 1	Trambon	Ot 17 Ollo	1	-		Class II	Ţ.	
			Lease Na	ame	WEST BAY		Well Number	22 \$WD		
								7		
	ľ	ING AND TUBIN		T		<del></del>	METHOD OF	EMPLACEMEN	IT OF CEMEN	IT PLUGS
SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT	<u> </u>	TO BE LEFT IN W		HOLE SIZE	4 6 6	alance Method		
11-3/4	42	350		350		14-3/4				
8-5/8	24	900	_	900		10-3/4	_ =	ump Bailer Metl		
5-1/2	15.5	2,680		2,680	)	7-7/8		wo Plug Method	l	
					<b>1</b>			Other	1	T=-
		D ABANDON D Vill Be Placed (inches)	AIA:	Plug #1 7/7/8	Plug #2 (~5月)	Plug #3 5	Plug#4 5	Plug #5	Plug #6	Plug #7
	n of Tubing or Drill Pi		<del></del>	2,630	2,630	1,000	350			
	nt To Be Used (each			83	25	25	40			
	To Be Pumped (cu. Ft	.)		98	27	27	47			
Calculated Top				2,630	2430 2430	800 800	0			
Slurry Weight (	of Plug (if tagged, ft.) Lb./Gal.)			2,630 15.6	15.6	15.6	15.6			<del> </del>
	t or Other Material (C	lass III)		CLASS A	CLASS A	CLASS A	CLASS A			_
LIS	ST ALL OPEN	HOLE AND/O	R PERFO	DRATED IN	TERVALS AN	D INTERVALS	WHERE CA	SING WILL BI	E VARIED (if	any)
ļ	From		]	To		Fror	m		То	
	2,950'			2,680'	OPEN HOLE					
			1					1		
Estimated	Cost to Plug W	ells				<u> </u>		1		
RIG		MISC COSTS	2700							
CEMENT		CONTING	1055							
RETAINER		TOTAL	21300							
SITE COST	3000	SEE ATTACHED	VVORKS	пссі	CERTIFICA	TION			**-	
1					CERTIFICA					
	•	e penalty of law tha								
		and that, based on					-			
		information is true , including the pos		-		-	ant penames for s	susmitting		
		., pos		with miletic						
Name and Office		(Please type or print)		Signature	< H1	16.1	•		Date Signed	
	J BROCK, AG			1 la	ully f	()look	The state of the s		1/24/2011	
EPA Forn	n 7520-14 (R	ev 8-01)		<i>,</i>						

ORIGINAL WELL CONSTRUCTION	DURING OPERATION	PLUGGING AND ABANDO	DNMENT CONSTRUCTION
	Surface		Surface
Top of cement SURFACE		Top Plug Interval SEE BELOW	
	Surface Casing 11-3/4" @ 350'		Surface Casing11-3/4" @ 350'
		*USDW Base Plug Interval 350'-0'	USDW Base
Top of cement SURFACE		*Intermediate Cut/Rip Point Plug Interval	*Intermediate Cut/Rip Depth N/A
	Intermediate Csg. 8-5/8" @ 900'		*Intermediate Csg. 8-5/8" @ 900'
		*Middle Plug Interval 2,630'-2,430'	
Top of Cement SURFACE	Packer Depth	*Long String Cut/Rip Point Plug Interval N/A	*Long String Csg Cut/Rip Depth N/A
Perforations NONE	2,630'  Long String Csg. 5-1/2" @ 2,680'	Bottom Plug Depth 2,950'-2'630'	Long String Csg. 5-1/2" @ 2,680'
Hole Size 7-7/8"	* Depth 2,950'	*Mechanical Plug Depth 2,630'	Depth 2,950'
** Add Any Additional Information * May not Apply		** Add Any Additional Information * May not Apply	
		AND INTERVALS WHERE CASIN	
Specify Open Hole/ Perforations/ Varied Casing OPEN HOLE	From 2,680	To 2,950	Formation Name NIAGARAN
S. EITHOLE	2,000	2,000	MINONIVAN
1			
	9		

# COST ESTIMATE FOR PLUGGING AND ABANDONMENT

Permittee: West Bay Exploration Company

Well Name: West Bay 22 SWD

EPA Permit Number: Proposed Well

Party Providing Cost Estimate: Brock Engineering, LLC

Total Cost Estimate: \$21,300

Date of Cost Estimate: 1/24/2011

Plug Locations Required for Proper P&A:

Plug Identifier*	Plug Top	Plug Bottom	Zone Being Protected (such as USDW, gas, rip point etc.)
Examples: 7"casing shoe 2700'-2600', surface, perforations 2100'-1900			
BELOW RETAINER	2630	2950	INJECTION ZONE
ABOVE RETAINER	2430	2630	BASE OF LONG STRING
ACROSS BASE OF 8-5/8	800	1000	BASE OF INTERMEDIATE CASING
BASE OF USDW TO SURFACE	0	350	BASE OF USDW

Have any intervals/sections of the wellbore been plugged previously? If so, give the location of the plugs, the circumstances that required the plug and how the plug was set.

NO			

# Plugging and Abandonment Normal Costs

# 1. Rig Costs

Travel	1	miles @	175	per mile =	\$175
Labor (Super & Crew)		hrs @		per hour =	
Equipment Costs (Rig cost, drilling package, etc.)	20	hrs @	232	per hour =	\$4,640
Miscellaneous Site Costs (Tubing work string rental, water storage, flow tanks, mud pit, etc.)		hrs @		per hour =	
Well Head Cutting				=	
Cement Tagging		feet @		per foot =	
Pulling Casing/Tubing		hrs @		per hour =	
Fulling Casing/Tubing		1113 (0)		per nour =	

# 2. Cement Costs

Pump Truck & Operator (Including Set Up)	8	hrs @	340	per hour =	\$2,720
Tank Truck & Operator	8	hrs @	90	per hour =	\$720
Type Cement CLASS A	175	sacks @	10	per sack =	\$1,750
Type Cement		sacks @		per sack =	
Type Cement		sacks @		per sack =	
Cement Retainer(s)	1 r	retainer(s) @	3000	each =	\$3,000
List Retainers					
Cement Additives (high temperature/pressure)	(a)			=	
Balance Plug inc. fluids and testing		plugs @		per plug =	
List Plugs: MILEAGE AND TRANSPORTATION	N NOPLACE ELSE TO PU	T ON THIS FORM			
Surface Plug inc. fluids and testing				=	\$1,780

### COST ESTIMATE FOR PLUGGING AND ABANDONMENT

3. Wireline Service Transportation hrs @ per hour = Labor hrs @ per hour = Service Charges Perf/Squeeze shots @ per shot = Cut/pull Casing rips @ per rip = Cement Retainer(s) retainer(s) @ each = List Retainers TOC Log = Depth charge for gage rings, junk basket feet @ per foot = Specialized tools for fluid sampling 4. Site Preparations & Costs General Site Engineering & Plan Development Owner/Operator Site Supervisor = \$1,700 Backhoe & Operator 4 hrs @ 80 per hour = \$320 80 \$240 Dozer & Operator 3 hrs @ per hour = Road Construction and Improvement Costs \$500 Pit Liner = 5. Transportation & Miscellaneous Special Land Use Costs (Zoning & Permits) = Winch truck w/driver (wages & mileage) 100 \$400 hrs @ per hour = Water truck w/ driver (wages & mileage) hrs @ per hour = Vacuum Truck w/ driver (wages & mileage) hrs @ per hour = 2 axle rig-up truck driver& crew wages & mileage) hrs @ per hour = hrs @ 1 axle truck w/ driver (wages & mileage) per hour = hrs @ Hot oiler (equip, labor & mileage) per hour = hrs @ Welder (equip, labor & mileage) \$300 75 per hour = Packer Fluid per specs per bbl = bbl @ per hour = Hydraulic Jacks hrs @ Bridge Plug Waste Disposal Costs \$2,000 = Tool Rental (Describe; examples: Casing Ripper, Collar Buster, etc.) Tool 1 = Tool 2 = Tool 3 = 6. Remediation Costs (mostly applicable to shallow wells) Sample Analysis (fluid or soil) = Soil Removal = Site Assessment Study Costs = System Removal Costs = Disposal System Modification Costs = Installation of Monitoring Well Costs = # Wells:

Type: Depth: Construction:

SUBTOTAL:			=	\$20,245
Contingency:	5.0	%	=	\$1,012
INITIAL TOTAL			=	\$21,257
Inflation factor			=	1.00
TOTAL AMOUNT, Rounded to \$100			=	\$21,300

# Attachment "R"



# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

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# **BOND FOR CONFORMANCE**

By authority of Part 615, Supervisor of Wells, Act 451 PA 994, as amended. Non-submission and/or falsification of his information may result in fines and/or imprisonment.

OIL AND GAE OPERA	ATIONS BOND
Bond number 08784181	
Single	
\$	\$ <u>250,000</u>
Well name and number	Attach initial well list

	,	Well name and nun	nber	Attach initial well list
West Bay Exp	loration Company, 13	3685 South West Bay	Shore, Suite #200, Trav	verse City, MI 49684
		(name and address o	f Principal)	
		in the	State of Michigan	as Principal and
Fidelity and D	eposit Company of N	Maryland, PO Box 122	7, Baltimore, Maryland 2	21203
		(name and address	of Surety)	
	zed and existing under the laws of business in the State of Mich		mly bound unto the State of Michiga	and duly n in the penal sum of
Two Hundred	Fifty Thousand & No	/100 Dollars (\$250,00	00.00)	Dollare
The Principal natural representation of the rule of th	amed is about to commence ar 451 PA 1994, as amended, on means the time when locati d on a well in a manner approve sipal complies with the provision obligations can be terminated of and the State of Michigan has the ecuted and accepted subject to es promulgated under section 6	nd prosecute to final completion ing, drilling, deepening, convertined by the supervisor, including the softher applicable provisions of the applicable provisions of the applicable provisions of the same remedies against the softher following condition: The liangle of the following conditions of the following	well(s) and operations authorized by ng, operating, producing, reworking, the filing of the mandatory records, a of Part 615, Act 451 PA 1994, as ame to in full force and effect. The Surety	r permits issued or to be issued plugging, and proper site restoration nd when the conformance bond has ended, in the final completion of the s liability herein is co-extensive with 4.211, R 324.213, R 324.214, and ed. (See reverse side of bond)
		(number(s) and co		
and gives notice to that this bond become		eed for terminating the prior bor	nd(s) as listed herein with such termin	nation to be effective as of the time
Signed, sealed and o	dated the 16th	day of _Septembe	r , <u>2005</u>	
(Principal)  By (Signature)	Sploration Company  Lyfs Setten  Gottschalk, Vice-Pr	Ву	(Surety)  (Signature)  (Signature)  (Signature)  Attorney-In	Burges
(Name and		s hand by an agent power of att	(Name and title)	must accompany the hand
vvnen the P	rimupat of ourety executes this	s bond by an agent, power or att	corney or other evidence of authority i	must accompany the bond.
	DEQ USE ONLY			
Permit number	Issue	date	MAIL TO:	AL CURVEY
Type of well	Current true vertical	depth Purpose of bond	OFFICE OF GEOLOGICA MICHIGAN DEPT OF EN	AL SURVEY VIRONMENTAL QUALITY

EQP 7200-3 (rev. 1/2005)

PO BOX 30256 LANSING, MI 48909-7756

## Excerpts from Gei all Rules governing oil and gas operatio (effective 9/20/96)

# R 324.211 Liability on conformance bond.

Rule 211.

- (1) The liability on the conformance bond is conditioned upon compliance with the act, these rules, permit conditions, instructions, or ders of the supervisor. Subject to the provisions in R 324.213, liability shall cover all operations of the permittee as follows:
- (a) Through transfer of the permit for the subject well pursuant to R 324.206(6).
- (b) Through final completion approved by the supervisor of the subject well.

(c) Otherwise as approved by the supervisor.

(2) The supervisor shall look to the conformance bond for immediate compliance with, and fulfillment of, the full conditions of the act, these rules, permit conditions, instructions, or orders of the supervisor. All expenses incurred by the supervisor in achievement of compliance with, and fulfillment of, all conditions of the act, these rules, permit conditions, instructions, or orders of the supervisor shall be paid by the permittee or the surety or from cash or securities on deposit. The claim shall be paid within 30 days of notification to the permittee or surety that expenses have been incurred by the supervisor. If the claim is not paid within 30 days, the supervisor, acting for and on behalf of the state, may bring suit for the payment of the claim.

### R 324.212 Conformance bond amounts.

Rule 212.

A person who drifts or operates a well shall file a conformance bond with the supervisor for the following amounts, as applicable:

(a) Single well conformance bonds shall be filed in the following amounts, as applicable:

(i) \$10,000.00 for wells up to and including 2,000 feet deep; true vertical depth.

- (ii) \$20,000.00 for wells deeper than 2,000 feet, but not deeper than 4,000 feet, true vertical depth.
- (iii) \$25,000.00 for wells deeper than 4,000 feet, but not deeper than 7,500 feet, true vertical depth.

(iv) \$30,000.00 for wells deeper than 7,500 feet, true vertical depth.

- (b) A person may file single well conformance bonds in an amount equal to 1/2 of the amount specified in subdivision (a) of this rule for wells where well completion operations have not commenced. A person may not file single well conformance bonds under this subdivision for more than 5 wells. A person shall file single well conformance bonds in the full amount specified in subdivision (a) of this rule or file a blanket conformance bond as specified in subdivision (c) of this rule or submit a statement of financial responsibility pursuant to R 324.210 before the commencement of well completion operations on any well.
- (c) Blanket conformance bonds may be filed as an alternative to single well conformance bonds. If a blanket conformance bond is utilized, then the permittee shall provide the supervisor with a list of wells covered by the blanket conformance bond. A maximum of 100 wells may be covered by a blanket conformance bond. If the permittee has more than 100 wells in a category, then the additional wells may be covered by single well conformance bonds or additional blanket conformance bonds. Blanket conformance bonds shall be filed in the following amounts, as applicable:
  - (i) \$100,000.00 for wells up to and including 2,000 feet deep, true vertical depth.
  - (ii) \$200,000.00 for wells deeper than 2,000 feet, but not deeper than 4,000 feet, true vertical depth.

(iii) \$250,000.00 for wells deeper than 4,000 feet, true vertical depth.

(d) A person shall not be required to file a blanket conformance bond or bonds in an aggregate amount of more than \$250,000.00. When the aggregate amount of the conformance bonds is \$250,000.00, the permittee may file 1 blanket conformance bond of \$250,000.00 to cover all of his or her wells.

### R 324,213 Cancellation of conformance bonds issued by a surety.

Rule 213

- (1) A surety company may cancel a conformance bond acquired pursuant to these rules upon 90 days' notice to the supervisor of the effective date of cancellation. However, the surety company shall retain liability for all violations of the act, these rules, permit conditions, instructions, or orders of the supervisor that occurred during the time the conformance bond was in effect.
- (2) Forty days before the effective date of cancellation, as provided in subrule (1) of this rule, a permittee shall secure a conformance bond from another surety company authorized to do business in the state of Michigan, deposit cash or other securities, or bring the well to final completion. Failure to comply with this subrule shall be cause for the immediate suspension of any or all components of the operations on the well.
- (3) A surety company shall remain liable until the violations have been corrected and the corrections are accepted by the supervisor for all violations of the act, these rules, permit conditions, instructions, or orders of the supervisor that occurred at the well during the time the conformance bond was in effect before the effective date of cancellation.

### R 324.214 Limitation of additional liability of blanket conformance bonds.

Rule 214.

A surety company may refuse to accept liability for additional wells under a blanket conformance bond by giving 10 days' notice by registered mail to the supervisor. Subject to the provisions of R 324.213, the blanket conformance bond shall continue in full force and effect as to all other wells covered by the blanket conformance bond for which permits were granted or transferred to the permittee before the effective date of the notice.

## R 324.215 Release of conformance bonds; release of well from blanket conformance bond.

Rule 215.

- (1) A conformance bond shall be released or a well shall be released from a blanket conformance bond, subject to the provisions of R 324.213, by the supervisor or authorized representative of the supervisor if a permittee disposes of the well and the permit for the well has been transferred to a new person pursuant to R 324.206(6) or if the well has been plugged and proper site restoration has been performed pursuant to R 324.1003, including the filing of the mandatory records.
- (2) The release of the conformance bond or the release of a well from a blanket conformance bond does not release a permittee from bility for any violations of the act, these rules, permit conditions, instructions, or orders of the supervisor which occurred during the time are conformance bond was in effect and which have not been corrected and accepted by the supervisor.
  - (3) A conformance bond filed to comply with a permit that has become terminated shall be released if there is final completion.

## Power of Attorney FIDELITY AND DEPOSIT COMPANY OF MARYLAND COLONIAL AMERICAN CASUALTY AND SURETY COMPANY

KNOW ALL MEN BY THESE PRESENTS: That the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, and the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, corporations of the State of Maryland, by THEODORE G. MARTINEZ, Vice President, and ERIC D. BARNES, Assistant Secretary, in pursuance of authority granted by Article VI, Section 2, of the By-Laws of said Companies, which are set forth on the reverse eight hereof and are hereby certified to be in full force and effect on the date hereof, does hereby including the reverse eight hereof and are hereby certified to be in full force and effect on the date hereof, does hereby including the reverse eight hereof and are hereby certified to be in full force and effect on the date hereof, does hereby including the reverse eight hereof and are hereby certified to be in full force and effect on the date hereof, does hereby including the resulting being blank KERN, Janet L. JENKINS, Stuart F. DESELMS, William A. GRANT, Jeffrey W. HOLMES, Brigette BURGESS, Colleen THAYER, Christy THOMPSON, dated May 30, 2003.

The said Assistant Secretary does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article VI, Section 2, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President and Assistant Secretary have hereunto subscribed their names and affixed the Corporate Seals of the said FIDELITY AND DEPOSIT COMPANY OF MARYLAND, and the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, this 11th day of January, A.D. 2005.

ATTEST:

FIDELITY AND DEPOSIT COMPANY OF MARYLAND COLONIAL AMERICAN CASUALTY AND SURETY COMPANY



Lie D. Bairf

Bv:

Eric D. Barnes

Assistant Secretary

Theodore G. Martinez

Theolio & Watery

State of Maryland City of Baltimore }ss:

On this 11th day of January, A.D. 2005, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, came THEODORE G. MARTINEZ, Vice President, and ERIC D. BARNES, Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, and the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and they each acknowledged the execution of the same, and being by me duly sworn, severally and each for himself deposeth and saith, that they are the said officers of the Companies aforesaid, and that the seals affixed to the preceding instrument is the Corporate Seals of said Companies, and that the said Corporate Seals and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

S OCHY S

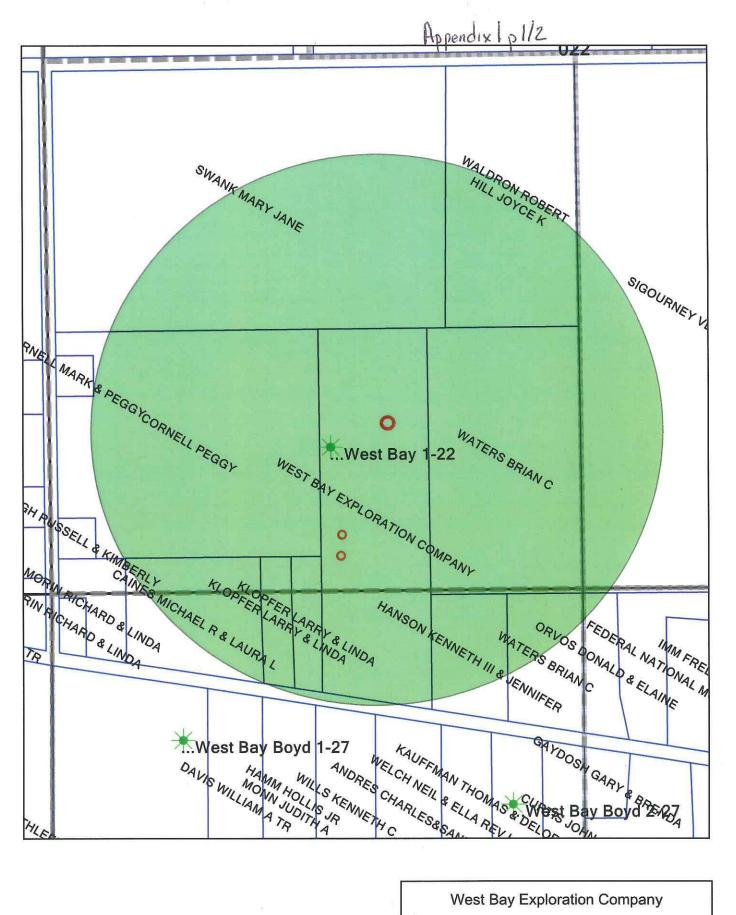
Constance A. Dunn

Notary Public

My Commission Expires: July 14, 2007

Constance a. Dunn

## Appendix "1"



West Bay	/ Exploration C	Company
SWD 1/4	Mile Area o	of review
January 25, 2011	16:25:23	

Appendix 1,2/2

#### 1/4 mile area of review owners

Larry and Linda Klopfer 12160 Ladd Rd Brooklyn, MI 49230

Michael and Laura Caines 12148 Ladd Rd Brooklyn, MI 49230

Peggy Cornell 10875 Bettis Rd Brooklyn, MI 49230

Robert Waldron and Joyce Hill 12767 Waterman Rd Brooklyn, MI 49230

Brian Waters 20310 Schwab Brooklyn, MI 49230

Mary Jane Swank 12101 Waterman Brooklyn, MI 49230

West Bay Exploration Company 13685 S West Bay Shore, Suite 200 Traverse City, MI 49684

Kenneth and Jennifer Hanson 12190 Ladd Rd Brooklyn, MI 49230

Donald and Elaine Orvos 12536 Ladd Rd Brooklyn, MI 49230

## Appendix "2"



13685 S. West Bay Shore / Suite 200 Traverse City, MI 49684 231-946-0200 / Fax: 231-946-8180

5555 N. Hogback Road Fowlerville, MI 48836 517-223-4011 / Fax: 517-223-4020

April 18, 2011

Mr. Brian Conway State Historic Preservation Officer State Historic Preservation Office Michigan Historical Center 702 West Kalamazoo Street P.O. Box 30740 Lansing, MI 48909-8240

Re: National Historic Register Request

New Underground Injection Well Location:

Well Name: West Bay 22 SWD

T4S, R2E, Sec. 22, NW4; NE4, SW4 (655' SL, 1,407' WL)

(Jackson County)

Dear Mr. Conway:

In order to apply for a United States Environmental Protection Agency (USEPA) permit for an underground injection well, the USEPA regulations require a determination that the injection well will not impact any properties listed or eligible for listing in the National Register of Historic Places. The well is/will be located as shown on the enclosed attachment. Please review this well location to make a determination in this matter. Please contact our office in writing with your determination so that we may forward the information to the USEPA.

Should you have any questions or requires any additional information regarding this location, please feel free to call me at (231) 946-0200.

Sincerely yours,

M. M. Ball

Ann Baker

Enclosure

## Appendix "4"

#### DEQ

#### MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

#### RECORD OF WELL DRILLING OR DEEPENING

Submit 3 copies within 60 days of drilling completion.)	R ec.
Name and address of permittee   West Bay #1-22   Surface location   NW114 of SE 1/4 of SW 1/4 Section 22 T4S F Township   County	ec.
Name and address of permittee   Surface location   NW 1/4 of SE 1/4 of SW 1/4 Section 22 T4S F   Township   County   Jackson   Traverse City Mi. 49684   Name and address of drilling contractor   S67" ft. from N   line and 575' ft. from E   line of   Directionally drilled (check one)   Previous permit numbers   Probability of   1/4 of 1/4 of 1/4 Section T   Previous permit numbers   Previous   Previous permit numbers   Previous permit numbers   Previous p	ec.
Nest Bay Exploration	ec.
13885 S. West Bav Shore   Suite 200	R ec.
Suite 200	R ec.
Soluth Boardman Mi.   Subsurface location (if directionally drilled)   Previous permit numbers   Soluth Boardman Mi.   Subsurface location (if directionally drilled)   Previous permit numbers   Soluth Boardman Mi.   Subsurface location (if directionally drilled)   1/4 of 1/4 of 1/4 section   T	R ec.
Advanced Energy Services P.O. Box 85 South Boardman Mi. 49680 Date drilling began Date drilling completed O1/27/2010 Date drilling began Date drilling began O1/27/2010 Date drilling began Date drilling completed O1/27/2010 Date drilling completed Driller 4370' Log 4369' Black River Formation at total depth Driller 4370' Log 4369' Black River Feet drilled - cable tools Feet drilled - rotary tools from Surf Feet drilled - cable tools Feet drilled - rotary tools from Surf To Size Where set Cement T.O.C. Ft. pulled Formation Formation F.U. L.C. Depth Am 13/4" 419' 150 lite/150 A Surface Niagaran Niagaran X 2920 Dartial S5/8" 3112' 80 Halcem 1998'  All Other Oil and Gas Shows Observed or Logged Formation Oil or Gas From To Gas Depth Correction Deviation Survey Plugged Back Depth Correction Deviation Survey Plugged Back Depth Depth Correction Deviation Survey Plugged Back Depth Depth Correction Depth Correction Depth Correction Depth Degrees Yes No Depth	R ec.
Available Ellevis devices    Yes   No   Subsurface location (if directionally drilled)	ec.
1/4 of	ec.
Date drilling began	ec.
O1/11/2010	2
Total depth of well Driller 4370' Log 4369' Black River ft. from line and ft. from line of ft. from surf to day.  Casing, Casing Liners and Cementing, Operating Strings Water Fill Up (F.U.) or Lost Circulation (L.C.) (X)  Size Where set Cement T.O.C. Ft. pulled Formation F.U. L.C. Depth Amount 13/4" 419' 150 lite/150 A surface Niadaran X 2920 Dartial 85/8" 3112' 600 lite/200 A surface 1998'	2
Driller 4370'   Log 4369'   Black River   ft. from   line and   ft. from   line of   Elevations   Feet drilled - cable tools   Feet drilled - rotary tools   Feet drilled - cable tools   Feet drilled - rotary tools	2
Elevations   Feet drilled - cable tools   Feet drilled - rotary tools   Feet drilled - rotary tools   Feet drilled - rotary tools   From Surf   Feet drilled - rotary tools   From Surf   From Surf   Feet drilled - rotary tools   From Surf   From	2
Casing, Casing Liners and Cementing, Operating Strings   Water Fill Up (F.U.) or Lost Circulation (L.C.) (X)	yt.
Casing, Casing Liners and Cementing, Operating Strings  Water Fill Up (F.U.) or Lost Circulation (L.C.) (X)  Size Where set Cement T.O.C. Ft. pulled Formation F.U. L.C. Depth Am  11 3/4" 419' 150 lite/150 A surface Niagaran X 2920 partial  8 5/8" 3112' 600 lite/200 A surface 5 1/2" 4151' 80 Halcem 1998' 300 Halcem 1998' All Other Oil and Gas Shows Observed or Logged  Formation Oil or Gas From To Where Observed (X)  Trenton/Black River both 3966' 4290' Formation Oil or Depth Samples Odor Pits Line Line Line Line Line Line Line Line	400
Size   Where set   Cement   T.O.C.   Ft. pulled   Formation   F.U.   L.C.   Depth   Amount	2
Size   Where set   Cement   T.O.C.   Ft. pulled   Formation   F.U.   L.C.   Depth   Amount	
11 3/4"	nt
8 5/8"   3112'   600 lite/200 A   surface	SI-SITE III
S 1/2"   4151'   80 Halcem   1998'	
Gross Pay Intervals Formation Oil or Gas From To Trenton/Black River Depth Correction Depth Correction Depth Correction Run at Degrees  All Other Oil and Gas Shows Observed or Logged Where Observed (X) Where Observed (X) Oil or Depth Samples Odor Pits Line Line Line Line Line Line Line Line	de Talana
Formation   Oil or Gas   From   To	
Formation   Oil or Gas   From   To	
Formation   Oil or Gas   From   To	
Trenton/Black River both 3966' 4290' Formation Oil or Gas Depth Samples Odor Pits Line Line Line Line Line Line Line Line	
Gas ples Odor Pits Line L  Depth Correction Deviation Survey Plugged Back  Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Run at Degree Yes No Depth Correction Depth Correction Run at Degree Yes No Depth	T E
Depth Correction Deviation Survey Plugged Back Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Depth Correction Run at Degrees Yes No Depth Correction Run at Degrees Yes No Depth Correction Run at Degree Run at	- 200
Depth Correction Run at Degrees Yes No Operation Depthics	3 0
Depth Correction Run at Degrees Yes No Operation Depthics	+
Depth Correction Run at Degrees Yes No Operation Depthics	_
Depth Correction Run at Degrees Yes No Operation Depthics	
Depth Correction Run at Degrees Yes No Operation Depthics	
FEB 1 6 2010	
FEB 1 6 2010	
2010	
Mailian	
(diet)	
Geophysical / Mechanical Logs (list each type run)	
Brand Log types Logged intervals	
Baker Atlas CDL/CNL/GR TD-Surf	_
DLL/MLL/GR TD-Min	
Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.	
CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein	
accurate and complete to the best of my knowledge."	ire true
Date Name and title (print) Signature O2/15/2010 Timothy L. Baker	ire true
02/15/2010 Timothy L. Baker Submit to: OFFICE OF GEOLOGICAL SURVEY,	are true
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY  EQP 7200-5 (rev. 8/2004) PO BOX 30256, LANSING, MI 48909-7756	are true



By authority of Part 615 or Part 625 of Act 451 PA 1994,

#### MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

#### RECORD OF WELL COMPLETION

Permit number/deepening permit no. API number

as amende	y of Part 615 or P d. Non-submissi on may result in fi	on and/or fal	sification of th	nis	59996 21-075-59996-00-00 Type of well (after completion)						
	- 100000470000000000000000000000000000000	ar Annua			Oil & G	· ACACTO					
	3 copies within 60				5.60565.05505	e & number					
	15 Oil/Gas Well	☐ Part 62	5 Mineral Wel	11	West B	ay 1-22					
Name and address of West Bay Explor 13685 S. West B Fraverse City, M	ration Bay Shore #20	0									
Directionally drilled (	check one)	Previous p	ermit numbers	S	Total dep	th of well 70	T.V	.D.			
Surface location			~		Subsurfa	ce location (if d	irectionally dr	illed)			
NW % of SE 1/2	of SW 1/4 Sec	ction 22	T4S 1	R 2E	1	4 of 1/4 o	f 1/4 S	ection	T	R	
ownship Norvell		County Jackson			Township	)		County			
9	th/South		East/West		Footages		outh		East/W	est	
750 Ft. from Sc	outh line and 14		n West line	e of Sec.		Ft. from	line and	Ft. f	at the same of the	lin	e of Sec.
Date well completed 2/5/2010			Injection for	nation(s)	Date of f	irst injection	Part 625 - r Disposal fo	nineral wells rmation(s)		on forn	nation(s)
			COM	IPLETION	I INTER\	/ALS(S)					
										Ope	
Date	1,550,500,000	Number holes Perforation or open hole interval							Ye	s	No
1/30/2010	60	4224	4-4254'						X		
				ION BY A	CID OR	FRACTURIN					
Date	1001 1051	Interval	treated		500	U 000/ II	Materials and	amount us	ed		
1/30/2010 2/4/2010	4224-4254° 4224-4254°;					llons 28% H allons 28% I		20 Ball se	palers		
14/2010	7224 7204,				0000 9	anoris 2070 i	TOT ACID W	ZO Dall St	Jaiors		
								Ob	eratio	ns Of	fice
								F	EB 1	6 20	10
	1	···	PR	ODUCTIO	ON TEST	DATA			Maile	ed	-
Oil Bbls/day	Gravity *API		Condensate Bbis/day		Gas F/day	Wate Bbls/d	9 1	H <sub>2</sub> S Grains/100 f		B.H.P.	and depth
200	47			90		0	N.A	1	1	768 @	@ 4239
CERTIFICATION stated herein are Name and little (print	true, accurate a t or type)	and comple	ste to the bes	st of my kn	owledge."		inder my su	na	ite		The fact
Timothy L. Bake	The second second second second	Manager	OFFICE O		GICAL SU	IRVEY ENVIRONMI	ENTAL QU/		16/201	0	

PO BOX 30256

LANSING MI 48909-7756

EQP 7130 (rev. 8/2004)

#### Deq

## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY RECORD OF WELL DRILLING OR DEEPENING

Required by a	uthority of Pa	rt 615 Supen			VELL DR 5 Mineral Well					t number	/Deepenir	ng numb	er	
					n may result in				6001					ļ
						API numbe	er		1000,			\		
(Sub	mit 3 copies	within 60 da	ys of drilli	ng completi	on.)	21-075-6 Well name		er						
	rt 615 Oil/O		Part 62	5 Mineral	Well	West Ba		1#1-27		<del></del>				
West Bay	•					SW 1/4		1/4 of	SW 1/	4 Section	22	T4S	R2E	
13685 S. V						Township		· · · · · · · · · · · · · · · · · · ·	·	County				
Suite 200		0.4				Norvell Footages	No	rth/South		Jackso		West		
Traverse C Name and ad						· ·	from S	line	and 14	40' ft. i	from W	line	of sec	<u>.                                    </u>
Advanced		-			İ	Directional					permit nu	ımbers		
P.O. Box 8	5					X Yes								
South Boar	rdman Mi.					NW 1/4		if directions	-	•	- 27	- 4C	D 31	_
49680 Date drilling b	negan	T	Date drilling	completed		Township	OI INV	/ 1/4 of	IAAA	/4 Section		T 4S	R 21	
01/30/2010	_	!	02/14/201	•		Norvell				Jacks				
Total depth o				it total depth		Footages	No	rth/South		<u> </u>		West		
Driller 4495	Log 44	490	Black Riv	er		·	. from N		and 66		from W		of sec	
Elevations		***************************************				Feet drilled	d - cable to	ols		Feet dril	led - rotar	•		
к.в. 1043	ft. R.F.	ft. R.T	.1042 ft	. Grd 1	029 ft	from		to		from SU	ırf	to	<u>D</u>	
											1 41 41	<b>*</b> 1 4341		
Size	ng, Casing L Where set		menting, C nent	T.O.C.	rings Ft. pulled	T	Formation	Fill Up (F.I	J.) or L F.U.	L.C.	Depth		mount	
11 3/4"	426'	150 lite/		surface		Niagarar			1.0.	<del>                                     </del>	3220	Partia		
8 5/8"	3333'	650 lite/		surface		Trenton/		ver			4267	Full	41	
5 1/2"	4151'	80 Haic		2580'										
		250 Hal	cem	r					<u> </u>				<del></del>	
	<u> </u>				<u> </u>	<u> </u>			<u> </u>	<u> </u>				
	Cara	- Devilator				A11 C	Man Oil a	nd Con Sh	Oh			<u></u>		
Form	ation	Oil or Gas	From	То		All C	oner On a	nd Gas Sh	Ows Or		here Obs		.)	
Trenton/Bl	ack River	both.	4273'	TD	Forma	tion	Oil or	Depth	Sarr	1-		Mud	Gas	Fill
			ļ				Gas		ples	s Odo	r Pits	Line	Log	Up
			<u> </u>			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			<del> </del>			<u> </u>		
		<del></del>	<del> </del>	1	<del></del>		<u> </u>	╁——	<del> </del>		<del>-  </del>	<u> </u>		├
<u> </u>		<u> </u>		<u> </u>			<u> </u>				<u> </u>			<u> </u>
	Depth Co	rrection			Deviati	on Survey				PI	ugged Ba	ack		<del></del>
Der	oth	Corre	ction	F	Run at	C	Degrees	Ye	s N	0		Depth		
see		attached		direction	ıal		·							
				<del></del>		<u> </u>			_					
				+	<del></del>	<del> </del>			+					
<del></del>				_ 1		<del></del>		I				······································		
				Geophysi	cal / Mechani	cal Logs (li	st each typ	е гип)						
	Brand	·			Log types					Logge	d intervals	·		
Baker Atla	<u>s</u>				<u>Jnable to ru</u>	in open h		<u>4487'-Su</u>						
			SBT/	GR/CCL	······································			<u>4487'-21</u>	<u>UO'</u>					
Notice: Repo	rt complete s	ample and fo	rmation rec	ord, coring re	ecord, and drill	stern test in	nformation	on reverse	side.	<del>, , , , , , , , , , , , , , , , , , , </del>				
CERTIFICAT		that I am aut	horized by :	said owner.	This report wa					ection. T	he facts s	tated he	rein are	true,
Date		Name and tit		· · · · · · · · · · · · · · · · · · ·			18	Signature ~		. <u> </u>	7			
02/19/201	•	Timothy L.						- Sementary and the	a. 🐝	4	202			
	· · · · · · · · · · · · · · · · · · ·	Submi	t to: OFI		OLOGICAL SU				, , , , , , , , , , , , , , , , , , ,					
EQP 7200-	5 (rev. 8/2004	)			T OF ENVIRC LANSING, M			,						

### DEQ

#### MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

### RECORD OF WELL COMPLETION

	7 D				Permit num	iper/deepeni	ng permit n	o.   API num	ber		
	of Part 615 or Par i. Non-submission				60010			21-075	-6001	0-00-00	)
	n may result in fine				Type of wel	ll (after comp	etion)				
	•				Oil & Gas	3					
	copies within 60 d				Well name	& number					
<del></del>	15 Oil/Gas Well	Part 62	5 Mineral Well		West Bay	y Boyd 1-2	7				
Name and address of West Bay Explore 13685 S. West B Traverse City, MI	ation ay Shore Dr #2	200									
						· · · · · · · · · · · · · · · · · · ·		,			
Directionally drilled (c ☑ Yes ☐ No	check one)	Previous p	ermit numbers		Total depth M.D.			V,D.			
Surface location						location (if	_	-			
	of SW 1/4 Secti		4 <b>S</b> R2	2E .		of NW 1/4	of NW 1/4		T 4	S I	R 2E
Township Norvell	I I	County Jackson			Township Norvell			County Jacks	on		
Footages: Norti	h/South		East/West		Footages:	North/S	South	<u></u>	Eas	t/West	
271 Ft. from Soi	uth line and 1440	) Ft. fror	n West line o	f Sec.	600 F	t. from Nor	th line and	660 F	t. from <sup>1</sup>	West ii	ne of Sec.
***************************************	Part 615 - oil/	gas wells					Part 625	- mineral we	lis		
Date well completed 2/20/10	Producing for Black River	nation(s)	Injection forma	tion(s)	Date of firs	t injection		formation(s)		olution for	rmation(s)
			COMPI	ETION	INTERVA	ALS(S)		· · · · · · · · · · · · · · · · · · ·			
										Ор	en
Date	Number holes			Perfora	ation or open	hole interva	ıl			Yes	No
2/19/2010	Open Hole	О.Н.	4495-4525				*****	<del>,</del>	Х		
``.			7-7-2								
		Ş	STIMULATIO	N BY A	CID OR FI	RACTURI	NG				
Date		Interval	treated				Materials a	and amount	used		
2/20/2010	4495-4525				5000 gal	28% Hcl.	Acid				
V											
							<del></del>	·			
										***************************************	
						-					
									****		
				<u>.</u>				VIII.			<u></u>
			DDO!	MOTIO	NITEOTI	) A T A					
Oil	Gravity		ondensate		N TEST D	JATA Wate	ar I	H₂S		DUF	and depth
Bbls/day	°API		Bbls/day		F/day	Bbls/c	. 1	Grains/10	) ft <sup>3</sup> .	Б.П.Р	. and depth
										TDD	
200	47	1		95		0	C	)		TBD	
	L									J	
CERTIFICATION stated herein are to						prepared i	under my s	supervision	and d	irection.	The facts
Name and title (print		- comple		a my Nik	mouge.	7 11		17	Date		
Name and title (print Timothy L. Bakei		anager	Signature	] ! er e 15	1/P	26	-		Date 	- 23	3-10
**************************************	Sub	mit to:	OFFICE OF (	SEOLÓG	TCAL SUR	VEY					
			MICHIGAN D				ENTAL Q	JALITY			
			PO BOX 302	56							

LANSING MI 48909-7756

#### RLJORD OF WELL DRILLING OR DEEPENING

					25 Mineral Wel on may result ii	-, -		- •		Ļ		er/Deepen	ing num	er	
amenoed iv	ON-SUDIMASIO	n and/or talsi	acation of the	ns monnauc	on may result ii	API numbi		onmeni	l,	6001	1	<del> </del>			
/Sui	bmit 3 copie:	s within 60 d	ave of drill	ina complet	ion 1										
(54)	niiit 3 cobie:	S WIGHTH OU C	ays or arm	ing complet	.ioi.,	21-075-6 Well name		nber	<del></del>	····					
	art 615 Oil/		Part 6	25 Mineral	Well	West Ba		yd #2	-27	<u></u>					
West Bay	Exploration	n				SW 1/4	of S	E 1/4 o	ı S	SW 1/4	4 Section	on 22	T4S	R2E	=
1	Vest Bay S					Township					County			·	
Suite 200						Norvell					<u>Jacks</u>	on			
Traverse (	City Mi. 496	84				Footages	1	Vorth/S	outh			Eas	t∕Wesl		
Name and ad	dress of drilli	ng contractor	•				from S					, from W		e of se	C.
Advanced	Eneray Se	rvices				Directional	-	(check	(one		Previou	is permit r	umbers		
P.O. Box 8	35					X Yes [		4°F 34	- 42	<u>l</u> .					
South Boa	rdman Mi.					Subsurfac				•	•	. ^=	- 40		
49680			Data dellina	- completed		SE 1/4 c	of N	E 1/4 c	of P	VW 1			T 4S	R 2	<u>:'E</u>
Date drilling I	=			completed		Township					Coun	•			
02/15/2010 Total depth of			03/03/20	10 at total depth	<u>.                                    </u>	Norveil Footages		Jorth/S	outh		Jack	(SON Eas	t/West		
Driller 4845		i		•		1	i. from 1			~~ 22	C 41 E	cas from W			_
Elevations	1.09 40	340	Black Riv	<u>er</u>		Feet drilled			ine a			illed - rota		e of se	<u>C.</u>
K,B. 1042.6	ft, R.F.	ft S	R.T. 1041	fi Grd 1	029.2 ft	from	u - Gabre	to		- 1	from S			TD	
N.B. 1042.0	/ 11. 11.1	- 11. 1	(.1. 1041	0:0 )	TOZO.Z II	I HORTI					110111 3			· <u> </u>	
Cari	ng, Casing L	iners and Co	menting (	Inerating St	ringe		Wate	e Filt I	in /F //	) or Lo	set Circ	ulation (L	C ) /Y)		
Size	Where set		ment	T.O.C.	Ft. pulled		Formatio		<u></u> T	F.U.	L.C.	Depth		Amoun	t
11 3/4"	424'	150 lite/		surface		Niagarar				<del></del> -	v	3300	Parti		
8 5/8"	3417'	650 lite/		surface		T TANK A CARE	·				^		1 2 1	41	
5 1/2"	4842'	75 Halc		3300"		<u> </u>							1		
		150 Hal		1											
				]						}					
							<u>-</u> .						<u>.</u>		
		Pay Interva	<del></del>	·		All O	ther Oil	and Ga	s Sho	ws Obs		or Logge		**	
	ation	Oil or Gas	From	To			071	<del></del>				Vhere Obs	· · · · · · · · · · · · · · · · · · ·	<del>ŕ                                    </del>	1 =
Black Rive	<u></u>	both	4510'	4590'	Forma	lion .	Oil or Gas	0	epth	Sam-	Odi	or Pits	Mud	Gas	Fill
		<del></del>	<del>                                     </del>	<del>                                     </del>			Gas		·	ples	1 00	FILS	Line	Log	Up
		<del> </del>		<del> </del>							<del>                                     </del>		┼		+
<u> </u>		<del>                                     </del>		<del>                                     </del>			<b></b>	-			-		<del> </del>		+-
		<u> </u>		JB			L			<u> </u>				<u></u>	<u> </u>
	Depth Co	rrection		T	Deviatio	on Survey			Γ	,	P	lugged Ba	ack		
Dep		Corre	ction	F	Run al	7	egrees		Yes	No			Depth		
see		atlached	<del></del>	direction	al		, , , , , , , , , , , , , , , , , , ,			1					
]															
															.,
				Geophysic	al / Mechanic	al Logs (lis	1 each ty	be tnu)							
<u></u>	Brand			·	Log types	<del> </del>					Logge	d intervals			
Baker Atlas	3			DL/GR					<u>'-Surf</u>						
			DLL/N	<u> 1LL/GR</u>				4846	<u>'-341</u>	7			··········		
A1 .) -		= 1.6 :				-1	(a.a			-					
<u>·</u>					cord, and drill :									<u></u>	
accurate and	complete to th	ne best of my	knowledge		his report was	prepared ur				d direc	tion, Ti	he facts st	ated her	ein are	true,
Date	N	ame and title	e (print)				;	Signatu	1	11.	A 1	L/			
06/20/2010		imothy L.	Baker	-		*** 1875			m	<u> </u>	$\Delta \angle$	Let			
EOB 7200-5	(rev. 8/2004)	Submit	MICH	HIGAN DEPT	LOGICAL SUF FOF ENVIRON LANSING, MI	MENTAL C		***		1					

	FORMATION F CORD  Attach additional sheets if necessary	API number	Permit numb	er/Deepening number
Elevation used	Geologist name	Tops taken from	1 00011	
1043	Fowler/Baker/Vancycle	Driller's log	Sample log	

	_	Formation	_		Formation
From	То	(type, color, hardness)	From	То	(type, color, hardness)
Note: if well where appro		iled, add true vertical depth formation tops			
surf	222(log)	Drift- Unconsolidated sand and			
222	290	gravel Shale& Siltstone- brn-gy-Grn, silty at top organic at base			
290	1230	Shale-Coldwater- Md-dk Brn- Blk,Silty, incr organic at base			
1230	1370	Sunbury Sh/Berea siltstone-Sh, Md Brn-Blk Silty,pyr. mixed w/siltstone, SSO-Lt md brn, Arg			
1370	15	Antrim-Dk Brn-Blk,Pyrand incr organic at base,SG incr toward base			
1554	1622	Traverse Fm- Limestone, Dk Brn- md Brn, Dns, Pyr, Dolomite, Md Gy- Gy, Dns			
1622	1744	Traverse Limestone-Md Brn-lt Brn Vfxln,Hd,			
1744	1978	Shale intbd w Dolomite and Lmst, Md Brn-Gy, Vfxln, Dns, Pos Dundee@1728'-Brn-Lt brn,Poor Samp,Pos Cvgs			
1978	2200	Detroit River- Anhydrite and Dolomite/Limestone, Lt-Md Brn Dns,Vfxln in pt,NS			
2200	2416	Bass Island/Bois Blanc- Dolomite,Anhydrite & Limestone AA			
2416	2685	G-Unit-Dolomite-Arg,Hd grading to Anhydrite- Lt-md Gy Brn			
2685	2766	C Shale-Gy-rdBrn, W/Dolomite and Anhydrite,Lt gy-Brn-bf Poor Samp.I			
2766	2972	B Evap-Anhydrite Wh-Lt Gy W/Dolomite-Vfxln, Lt-md Gy, Intbd at base with Anhy. AA	if well was	cored, atlach core	description
2972	3160	Dolo &Limst-Wh-lt Gy,Dns,Anhydritic @3110-Wh, Dns	DR	ILL STEM TEST D	ATA
3160	3386	Niagaran-Dolomite,AA,Md Gy, VfxIn Intbd W/Anhydrite AA,V porous 2880'-3300'			
3386	3884	Clinton/Cinn-Dolomite, Arg, hd, dk gy, grd to lt gy intbd w/Lmst,lt-md gy Dns			
3884	4212	Utica- Shale, Gy-Grn,Gummy-Hd			
4212	4526	Trenton-Dolo, Lt -Md Gy,Dns,W/ Lmst @ 4236'-4526' Lt-Md Gy Brn,Vfxin,			
4526	TD	Black River- Dolomite,Md Brn- GyBrn,SO&G@4590'			



Job Number: DR100040

Company: WEST BAY EXPLORATION Lease/Well: WEST BAY/ BOYD 2-27

Location: NORVELL TWP., JACKSON CO.

Rig Name: ADVANCED # 2

RKB:

G.L. or M.S.L.:

State/Country: MICHIGAN / USA Declination: 6.33 DEGREES WEST

Grid:

File name: C:\WiNSERVE\ASDRIL~1\2010\BOYD227.SVY

Date/Time: 04-Mar-10 / 10:03

Curve Name: WESTBAY/BOYD 2-27 ( as drilled )

### Directional Drilling Contractors SURVEY REPORT

#### WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method Vertical Section Plane 144.40 Vertical Section Referenced to Wellhead Rectangular Coordinates Referenced to Wellhead

Measur Depti FT		Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O Distance FT	S U R E Direction Deg	Dogleg Severity Deg/100	
KOP	@ 484 MD	= ··· #	T ARIST TOR					and the same of th		7
484.00	.00	.00	484.00	.00	.00	.00	.00	.00	.00	:
486.00	.70	169.10	486.00	01	.00	.01	.01	169.05	35.00	
516.00	1.80	164.20	515.99	65	.17	.62	.67	165.64	3.68	
546.00	3.20	162.10	545.96	-1.90	.55	1.86	1.97	163.79	4.68	
576.00	) 4.70	161.00	575.89	-3.85	1.21	3.84	4.04	162.59	5.01	
606.00		159.30	605.76	-6.51	2.17	6.56	6.86	161.54	4.70	
636.00		157.80	635.54	-9.86	3.49	10,05	10.46	160.48	5.37	
667.00		156.80	666.21	-14.04	5.25	14.47	14.98	159.51	4.54	
697.00		157.80	695.76	-18.80	7.23	19.49	20.14	158.95	5.36	
728.00	12.80	157.80	<b>72</b> 6. <b>1</b> 1	-24.64	9.62	25.63	26.45	158.68	6.77	
757.00		157.80	754.26	-31.07	12,24	32.39	33.39	158.50	7.24	
788.00		157.50	784.04	-39.02	15.51	40.75	41,99	158.32	7.75	
818.00	19.80	156.10	812.48	~47.78	19.28	50.08	51.53	158.03	8.46	
848.00		154.30	840.50	-57.52	23.78	60.61	62.24	157.53	7.96	
878.00	24.20	152.90	868.08	-68.08	29.03	72.25	74.01	156.90	7.24	
907.00	26.50	151.50	894.29	-79.06	34.83	84.55	86.39	156.22	8.20	
937.00	28.90	150.10	920.85	-91.22	41.64	98.41	100.28	155.47	8.29	
968.00	31.00	148.00	947.71	-104,49	49.60	113.84	115.67	154.61	7.57	
1008.00	31.60	144.80	981.89	-121.79	61.10	134.60	136.26	153.36	4.42	
1038.00	31.70	142.70	1007.43	-134.48	70.41	150.34	151.80	152.37	3.69	
1068.00	31.70	141.70	1032.95	-146.94	80.07	166.09	167.34	151.41	1.75	
1097.00		141.70	1057.60	-158.93	89.54	181.35	182.42	150.60	.69	
1126.00		142.00	1082.18	-171.03	99.05	196.73	197.64	149.92	1.17	

Measured Depth FT	incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section	C L O S Distance FT	S U R E Direction Deg	Dogleg Severity Deg/100
1156.00	32.10	141.70	1107.58	-183.59	108.91	212.67	213.46	149.32	.63
1177.00	32.30	142.00	1125.35	-192.39	115.82	223.85	224.56	148.95	1.22
1207.00	32.40	142.00	1150.69	-205.04	125.71	239.89	240.50	148.49	.33
1237.00	32.70	141.70	1175.98	-217.73	135.68	256.02	256.54	148.07	1.14
1267.00	33.00	142.00	1201.18	-230.53	145.73	272.27	272.73	147.70	1.14
1297.00	32.60	141.70	1226.40	-243.31	155.77	288.51	288.90	147.37	1.44
1327.00	32.10	141.30	1251.74	-255.87	165.76	304.54	304.87	147.06	1.81
1356.00	32.40	141.30	1276.27	-267.95	175.44	319.99	320.27	146.79	1.03
1385.00	32.40	141.70	1300.75	-280.11	185.11	335.51	335.75	146.54	.74
1415.00	31.80	141.70	1326.17	-292.62	194.99	351.44	351.63	146.32	2.00
1446.00	31.80	141.70	1352.51	-305.44	205.11	367.75	367.92	146.12	.00
1476.00	30.90	140.60	1378.13	-317.60	214.90	383.34	383.47	145.92	3.56
1506.00	30.20	140.60	1403.97	-329.38	224.58	398.55	398.66	145.71	2.33
1536.00 1566.00	30.20 30.40	142.00 143.10	1429.90 1455.80	-341.15 -353.17	234.02 243.22	413.62 428.75	413.70 428.82	145.71 145.55 145.45	2.35 1.97
1596.00	30.80	143.10	1481.62	-365.38	252,39	444.01	444.08	145.37	1.33
1626.00	31.00	143.40	1507.36	-377.73	261,61	459.42	459.47	145.29	.84
1656.00	31.70	143.40	1532.98	-390.26	270,91	475.02	475.07	145.23	2.33
1688.00	31.90	143.10	1560.18	-403.77	281.00	491.88	491.93	145.16	.80
1719.00	32.30	142.40	1586.44	-416.88	290.97	508.35	508.38	145.09	1.76
1750.00	32.30	142.40	1612.65	-430.00	301.08	524.90	524.93	145.00	.00
1782.00	32.40	142.40	1639.68	-443.57	311.53	542.01	542.04	144.92	.31
1813.00	32.20	142.40	1665.88	-456.70	321.63	558.57	558.59	144.84	.65
1845,00	32.40	141.70	1692.93	-470.18	332.15	575.65	575.67	144.76	1.33
1876.00	33.10	141.30	1719.00	-483.30	342.59	592.40	592.41	144.67	2.36
1908.00	33.40	141.00	1745.76	-496.97	353.60	609.92	609.92	144.57	1.07
1939.00	33.10	142.00	1771.69	-510.27	364.18	626.89	626.90	144.48	2.02
1970.00	32.60	143.10	1797.73	-523.62	374.40	643.70	643.70	144.43	2.51
2001.00	32.60	143.10	1823.85	-536.97	384,43	660.40	660.40	144.40	.00
2031.00	32.60	143.40	1849.12	-549.92	394.10	676.56	676.56	144.37	.54
2064.00	32.90	144.80	1876.88	-564.38	404.57	694.41	694.41	144.37	2.47
2096.00	33.20	144.80	1903.70	-578.64	414.63	711.86	711.86	144.38	.94
2127.00	33.40	144.80	1929.61	-592.55	424.44	728.88	728.88	144.39	.65
2158.00	33.70	144.10	1955.44	-606.49	434.40	746.01	746.01	144.39	1.58
2189.00	34.00	144.10	1981.19	-620.48	444.52	763.28	763.28	144.38	.97
2221.00 2252.00 2285.00 2317.00 2348.00	33.30 32.30 32.20 32.50 32.40	143.80 143.10 143.10 143.10 143.40	2007.83 2033.88 2061.79 2088.83 2114.99	-634.81 -648.31 -662.39 -676.08 -689.41	454.96 464.96 475.53 485.81 495.76	781.01 797.80 815.41 832.52 849.15	781.01 797.80 815.41 832.53 849.16	144.37 144.35 144.33 144.30 144.28	2.25 3.45 .30 .94
2379.00	32.40	144.10	2141.16	-702.80	505.59	865.76	865.77	144.27	1.21
2411.00	32.10	145.90	2168.22	-716.79	515.38	882.84	882.84	144.28	3.14
2442.00	31.80	146.20	2194.53	-730.40	524.54	899.23	899.23	144.32	1.09
2474.00	31.20	145.20	2221.81	-744.21	533.96	915.95	915.95	144.34	2.49
2506.00	31.60	144.80	2249.13	-757.87	543.53	932.62	932.62	144.35	1.41

	Measured	Incl	Drift	True			Vertical	01.0	SURE	Dogles
	Depth	Angle	Direction	Vertical	N-S	E-W				Dogleg
	FT	Deg	Deg	Depth	FT		Section	Distance	Direction	Severity
	<b>''</b> .		ņēā	Debui	—	FT	FT	<u>F</u> T	Deg	Deg/100
	2538.00	31.50	144.10	2276.40	-771.49	553.26	949.36	949.36	144.35	1.19
	2569.00	31.40	143,40	2302.84	-784.53	562.82	965.54	965.54	144.34	1.22
	2601.00	31.40	143.10	2330.16	-797.89	572.80	982.21	982.21	144.33	
	2632.00	31.70	144.10	2356.57	-810.95	582.42				.49
	2664.00	31.60					998.42	998.43	144.31	1.95
	2004.00	31.00	144.10	2383.81	-824.55	592.27	1015,22	1015.22	144.31	.31
	2696.00	31.20	143.80	2411.13	-838.03	602.08	1031.89	1031.89	144.30	1.34
	2727.00	30.90	143.80	2437.69	-850.93	611.52	1047.88	1037.88	144.30	.97
	2759.00	30.60	143.80	2465.19	-864.13	621.19	1064.24			
	2791.00	30.30	143.40	2492.77	-877.19			1064.24	144.29	.94
	2823.00	29,60				630,81	1080.45	1080.45	144.28	1.13
	2023.00	29,00	142.40	2520.50	-889.93	640.45	1096.42	1096.42	144.26	2.69
	2855.00	28.70	143.10	2548.45	-902.34	649.88	1112.00	1112.01	144.24	3.01
	2886.00	27.90	143.40	2575.74	-914.11	658.68	1126.70	1126.70		
	2917.00	27.40	144.10	2603.20	-925.71	667.18	1141.08		144.22	2.62
	2949.00	27.20	144.50	2631.64	-937.63			1141.09	144.22	1.92
1			144.50	2031.04	-937.03	675.7 <u>5</u>	1155.76	1155.76	144.22	<u>85</u> _
	TOP NIAG	RINE								! i
1	2972.00	26.34	144.22	2652,17	-946.05	681.78	1166.12	1166.12	144.22	3.79
!,	. Nati <b>wa</b> Arthur and	s r rummann tirt	and the second of the second o	. <del></del>	: <b>_</b>	<del></del>			144.22	3.79
	2981.00	26.00	144.10	2660.25	-949.27	684.11	1170.08	1170.09	144.22	3.79
	3013.00	25.60	143.40	2689.06	- <del>9</del> 60.50	692.34	1184.01	1184.02	144.22	1.57
	3044.00	25.10	143.40	2717.08	<i>-</i> 971.15	700.26	1197.28	1197.29	144,21	1.61
	3075.00	25.00	143,40	2745.16	-981.69	708.08	1210.40	1210.41	144.20	.32
	2407.00	04.00	440.00	0774.47	000.50	740.00	4000 00			
	3107.00	24.90	143.80	2774.17	-992.56	716.09	1223.90	1223.91	144.19	.61
	3139.00	24.30	143.10	2803.27	-1003.26	724.02	1237.22	1237.23	144.18	2.08
	3 <b>17</b> 1. <b>0</b> 0	23.00	143.10	2832.58	-1013.52	731.73	1250.05	1250.06	144.17	4.06
	3202.00	22.20	143.40	2861.20	-1023.07	738.86	1261.96	1261.98	144.16	2.61
	3233.00	21.70	144.50	2889.95	-1032.44	745.68	1273.55	1273.56	144.16	2.09
	3264.00	20.80	145.50	2918,84	-1041.64	752.13	1284.79	1284.80	44447	2.42
	3296.00	20.20	146.60	2948.82	-1050.93	758.38		1296.00	144.17	3.13
				2977.99	-1050.95		1295.99		144.18	2.23
	3327.00	19.40	147.70			764.08	1306.48	1306.48	144.21	2.85
	3358.00	18.80	148.40	3007.28	-1068.36	769.45	1316.60	1316.60	144.24	2.07
	3368.00	18.80	148.40	3016.74	-1071.10	771.14	1319.81	1319.82	144.25	.00.
	3430.00	17.50	149.10	3075.66	-1087.61	781.16	1339.07	1339.07	144.31	2.13
	3460.00	16.30	148.40	3104.36	-1095.07	785.68	1347.77	1347,77	144.34	4.06
	3492.00	15.10	146.60	3135.17	-1102.37	790.33	1356.41	1356.41	144.36	4.05
	3524.00	13.70	145.20	3166.16	-1102.57	790.33 794.79	1364.37			
		12.70	144.10	3197.32	-1114.93			1364.37	144.37	4.51
	3556.00	12.70	144.10	3197.32	-1114.93	799.01	1371.67	1371.67	144.37	3.22
	3587.00	11.40	143.40	3227.63	-1120, <del>1</del> 5	802.84	1378.14	1378.14	144.37	4.22
	3619.00	10.60	143.80	3259.04	-1125.06	806.46	1384.25	1384.25	144.37	2.51
	3650.00	9.20	144.80	3289.58	-1129.39	809.58	1389.58	1389.58	144.37	
	3682.00	7.70	146.20	3321.23	-1123.39	812.24				4.55
							1394.28	1394.28	144.37	4.73
	3713.00	6.60	145.90	3351.99	-1136.46	814.40	1398.14	1398.14	144.37	3.55
	3744.00	5.80	144.80	3382.81	-1139,22	816.30	1401.48	1401.48	144.38	2.61
	3776.00	5.10	145.50	3414.67	-1141.71	818.04	1404.52	1404.52	144.38	2.20
	3808.00	4.50	145.90	3446.55	-1143.92	819.55	1407.20	1404.32	144.38	1.88
	3839.00	3.50	143.40	3477.48	-1145.69	820.79	1407.20	1407.20		
		2.60	143.40	3508.43					144.38	3.27
	3870.00	2.00	141.30	3000.43	-1147.00	821.80	1411.01	1411.01	144.38	2.93

Measured Depth FT	Inci Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O Distance FT	SURE Direction Deg	Dogleg Severity Deg/100
3902.00	2.30	143.40	3540.40	-1148.08	822.63	1412.38	1412.38	144.38	.98
3934.00	1.70	141.00	3572.38	-1148.96	823.31	1413.49	1413.49	144.38	1.89
3965.00	.60	142,70	3603.38	-1149.45	823.70	1414.11	1414.11	144.37	3. <b>5</b> 5
3997.00	. <u>3</u> 0	80.50	3635.38	-1149.57	823.89	1414.32	1414.32	144.37	1.66
Projected	to Bit @ 4	045 MD					76. 6.40.14 -14.00		1
4045.00	.30	80.50	3683.38	-1149.53	824.13	1414.43	1414.43	144.36	.00
Projected	TD @ 484	5 MD	1. 2 SARAT 1. T 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		XL		- 1		- * * : : : : : : : : : : : : : : :
4845.00	.30	80.50	4483.37	-1148.84	828.27	1416.27	1416.28	144.21	.00

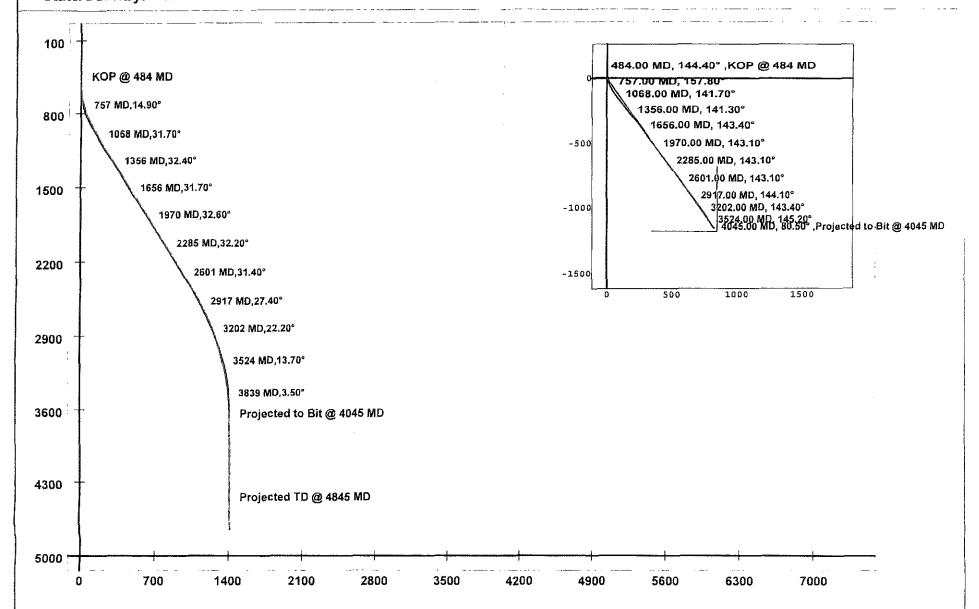
Job Number: DR100040

Company: WEST BAY EXPLORATION Lease/Well: WEST BAY/ BOYD 2-27 Location: NORVELL TWP., JACKSON CO. Rig Name: ADVANCED # 2

State/Country: MICHIGAN / USA

Declination: 6.33 DEGREES WEST File name: C:\WINSERVE\ASDRIL~1\2010 Date/Time: 04-Mar-10 / 10:01







#### MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

**RECORD OF WELL COMPLETION** 

					Permit nu	mber/deepenin	g permit no.	API numbe	r	
	of Part 615 or Par				60011	,		21-075-6		
	<ol> <li>Non-submission n may result in fine</li> </ol>			+		ell (after compl	etion)	12. 3.00		
onsmoun	п тнау технік ві вп	co anu/UFI	пфизопиена		oil	, IF:	,			
(Submit 3	copies within 60 d	lays of wel	completion.)			e & number	<del></del>			
	5 Oil/Gas Well					ay Boyd #2-2	27			
Name and address of West Bay Explora 13685 S. West Bay Suite 200, Traver	ation ay Shore Drive		,,,,,,							
Directionally drilled (c			ermit numbers		Total dep	th of wall				
Yes No	illect one)	, sevious p	emini nombers		M.D. 484	5'		.D. 4483'		
Surface location	10141 1/2 11	on 22	. 1C D.	. E::	Ī	ce location (if d	•	,	- 40	- ar
SW ¼ of SE ¼ Township		on ∠ 🗪 County	T 4S R 2	<u> </u>	SE 1/4 Township		NW 4s		T 4S	R 2E
Napoleon		Jackson			Napoleo	on		County Jackson		
	n/South	.,	East/West		Footages				East/West	
186' Ft. from Sot	uth line and 1440		n West line of	Sec.	963'	Ft. from North		····	rom West	line of Sec.
	Part 615 - oil/		T1-2-42	1(-)				nineral wells		<del></del>
Date well completed D&A	Producing form D&A	nation(s)	Injection format	ion(s)	Date of fir	st injection	Disposal fo	rmation(s)	Solution f	omation(s)
			COMPL	ETION	INTERV	ALS(S)				
-									L	pen
Date	Number holes			Perfora	alion or ope	en hole interval	*** ****		Yes	No
3/11/10	52		2-4605					·····		X
3/15/10	28	4507	7-4514						-	<u> </u>
	ļ	-			<del></del>					
					<del></del> .				ļ	
			<del></del>					····	<b>]</b>	
	ļ			<del></del>						
	L	1					74444444		L	
Date	1	Interval	STIMULATION	V BY A	CID OR F		lG Materials and	1 amount uss	ad	
	4500 4605	niter val	71 CO 100		5001			amount use	<del></del>	
3/12/10	4592-4605		<del></del>			28% Hcl ac				
3/15/10	4507-4514			<del></del>	500 gai	28% Hcl ac	ia			
				7#						
			v mm		<u> </u>	······································				
		<del></del> ;			<del> </del>					<del>-</del>
					<b></b>					
			PROF	UCTIO	N TEST	DATA	****		•	
Oil	Gravity		Condensate		as	Water		H₂S	B.H.	P. and depth
Bbls/day	°API		Bbls/day	MCI	E/day	Bbls/da	у (	Grains/100 ft <sup>3</sup>		
O				<u>-</u>		100		·	<del> </del>	
						<u> </u>				
CERTIFICATION 'stated herein are tr						s prepared ur	nder my sur	pervision an	nd direction	. The facts
Name and title (print			Signature	<i>H</i>	1/ /			Dot		
Timothy L. Baker			Signature	wit	HIT.	Selection		Date	7/20	110
. mony E. Barton		mit to:	OFFICE OF G		TCAL SIII	RVEY			1100	IV
	Gupi	10,	MICHIGAN DI PO BOX 3025	EPARTN			NTAL QUA	LITY		
			LANSING MI		756					

EQP 7130 (rev. 8/2004)

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MICHIGAN DEPAREMENT OF ENVIRONMENTAL			EOLOGICAL	SURVEY		
RECORD OF WELL PLUGGING	Permit numbe	r W	ell name and	number		
OR CHANGE OF WELL STATUS	60094	W	est Bay Bo	yd #2-27		
	API number					
Required by authority of Part 615 Supervisor of Wells or	21-075-600					
Part 625 Mineral Wells of Act 451 PA 1994, as amended	Name and add	dress of per	mittee			
Non-submission and/or falsification of this information	West Bay E	Exploration	1			
may result in fines and/or imprisonment.	13685 S W	est Bay S	hore Drive			
	Suite 200.					
Part 615 Oil/Gas Well Plugging	Traverse C	itv				
☐ Part 625 Mineral Well ☐ Change of Well Status	Mi. 49684					
Name and address of contractor/service company	Type of well			Field name		-
McConnell & Scully	Oil \$ Gas					
146 W. Main St.	Surface locati			_		
Homer, Mi.		SE 1/4	SW1 /4	Sec 27	T 4S	R_2E
49245	Township			County		
	Napoleon	<u> </u>		Jackson	·····	
	Date plugging	/change sta	rted	Date pluggi	ng/change	completed
	05/14/10	,		05/21/10		
DEQ employee issuing plugging permit or approving Change of Well Status.				Date issu	ieq	
Walt Danyluk				05/03/1		
Any change of well status which results in a change of production						
injection test records. All records must include a narrative or da	ally chronolo	gy and sig	gned certifi	cation not	ed on rev	/erse.

_					MELL BLUCON	*				
				(Hole	WELL PLUGGING conditions after plugging					
					CASING	-99/-9/				
C	asing size		Where	set	Amount cas	Amount casing pulled Depth casing cut/perfed; or wind				
11 3/4"		<u> </u>	424		0 NA					
8 5/8"			3417		0 NA					
5 1/2"			4842		0 window milled to facilitate lateral					
							under permit # 60	094		
						<u></u>				
<u> </u>				<del></del>	PLUGS					
	P . 1		lake and type	1	ment plugs: type,	Additives,type	Volume and types	184-24-25	Tagged	
·-	of plug	or	of bridge or plug		ount of cement &	and percent	of spacers/flushes	Wait time	Top?	
Bottom	Тор	<del></del>		mix water					Y/N	
4571	4570	Bake		Mechanical					У	
4322	4321	Bake	<u> </u>	Mechanic	al				У	
	ļ									
	<u> </u>	↓	<del></del>							
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		<u> </u>		<u> </u>	<u> </u>		1	<u></u>	L	
			erials were left or re		wellbore. If so, describ	e materials fully in the	Daily Chronology sect	ion on revers	е	

Light Check if cores were taken and attach core descriptions

Mail completed original and three copies to the appropriate DEQ district office within 60 days after completion of plugging/change of a Part 615 oil/gas well or within 30 days of a Part 625 mineral well.

OFFICE OF GEOLOGICAL SURVEY MICHIGAN DEPT OF ENVIRONMENTAL QUALITY PO BOX 30256 LANSING, MI 48909-7756

COMPLETE BOTH SIDES

API num 21-075-6		150/150   lite/A		Permit number 60094							
21-070-0	0011			CH/	ANGE OF W		IS				
Change wa	s to:	Convert curren	t zone to:		iate well:			(recomplete	as)	Redrill:	
-					orf and test exist			production zo			tal drain hole
		Disposal			pair casing/cem	-	Disp	-		_	ed casing
			y recovery		her			ondary recove	eΓV		am open hole
		-	•	_		<del></del>	Stor	-	•	_	
							Othe	_		Other	
				Walle	asing record -	BEEORE ch					
Ca	sing	Ce	menl	110110	Perforati		rarigo				
Size	Depti	Sacks	Туре	From	To	If plugged,	HOW?	Ac	id or frac	cture treatme	nt record
11 3/4"	424'										
710,4	<del>  '=</del>	7,00,100	110077	1							
8 5/8"	3417	650/200	lite/A								
5 1/2"	4842			4592	4605			500 gal 28	3% Hcl	acid	
0 172	1072	70,100	110.011,77	4507	4514		,	500 gal 28			
	71 77 die 1	Well casing	record - AF	<u></u>		litions and c	hannası				
Ca	sing			LI COI alige	Perforati		Hariyes (	July, Comple	יים ובאנ	(GCOLG)	
Size	Depti			From	To	If plugged,	HOW?	Ar	id or fra	clure treatme	nt record
	- Septi	. 00,010	, , , , ,	4592	4605	CIBP	. , - ,		5, 1131		
			<del>                                     </del>	4507	4514	CIBP					
<del></del>	<del> </del>		<del> </del>	7301	10   14	OID!				***************************************	
	<del> </del>			<del>                                     </del>							
	<del> </del>			<u> </u>					<u></u>		
	<u> </u>		I DIANGE			1			D CLIAN	AF	
Total depti	ь Т			lated for		Total depth		npleted Fm	R CHAN	GE completed fo	
	[]		†			4583		ick River		,	4
4842 BOPD					essure	BOPD		FGPD	Inj Ra	k Gas	Pressure
1	1	WCCGFD	ing Nate		555016	200	98	rgru	linj re	ste	1
0	I	DAIL A DDADITO	TION TEST D	ECOBD				ECT DECOR			460
					essure	DAILY INJE	Bbls w	EST RECOR	Pres	jection well	Brine disposal Specific gravity
Data 1	Oil	l l	<b>!</b> i	Tubing	Casing	Date	or Mcf	<u> </u>	jinning	Ending	of water
Date	(bbls)					Date	Or MG	yas Deg	Juning	Ending	U) Water
	231			520	620	<b> </b>				ļ	<u> </u>
5/26/10	178			482 492	688						
5/27/10	196			A	691	-			······	<u> </u>	<del></del>
5/28/10	211			460	~~~	-					
5/29/10				457	688	<b> </b>			<u> </u>		<del></del>
5/30/10				453	688	1	<u> </u>				
5/31/10	195	10	100	447	688	<u> </u>			±.		
Danada in	مطفالسانية	della chennologia	F abanas (n) ins	dos instruto d	DAILY CHRO		ulione to in	sured plussins	inala atia	na Dosaiha	tools tubing ato
left in hole :	ı detali trie and anv lo	idaliy chronology c los nin. Include da	or criange/plugg ates pils filled, s	urface restore	ed etc. Use addit	tional pages as	needed.	sceo hindili id	II ISB OCUL	ins. Describe	toois, tobing, etc.
						F-3ve de					
Date			N 40041								
5/14/10				40							
]				-							
				outh of su	пасе and 824	4" East					
		_	I.D.								
5/21/10	Tes	st Weil									
	1										
L								·			
NOTICE: U	Under Pa	rt 615 Supervisor	of Wells or Pa	art 625 Miner	ral Wells, Act 45	1 PA 1994, as	s amende	d, a well own	er has co	ontinuing liab	ility for the integrity
of a plugge	ed well.			~	*1 *					mm	
		state that I am a			nis report was p	orepared unde	r my supe	ervision and d	irection,	the facts st	ated herein are
true, accui	iate ano c	complete to the b	estormy knov	weuge.		Л					
Name and	l title (prin	ted or typed)			Autho	rized signalur	e ///	// /	61		Dale,
Tim	othy	L. Bak	er -Oper	ations 1	Mar	1 W	11	1 4	XC.	_	13/21/10
1 -		ot be terminated				mouse holes,	and pits	filled, site leve	led and	cleaned and	records filed.



#### MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

	=		REC	D OF	WELL DR	ILLING	OR DE	E' NIN	IG					
									Permit	number/0	eepenir	ng numb	er	
amended. No	วก-รบbmissioเ	n and/or falsif	fication of the	nis informatio	n may result in			nent.	60094	1				
<b>(0</b>				·	<b>.</b>									
(Sub	imit 3 copies	i Within 60 di	ays of drill	ing complet	ion.j	21-075-6 Well name	30011_ and number	er						,
			Part 6	25 Mineral	Well	West Ba	y & Boyd	#2-27 H[	1					
1	,								341		00	-40	-05	
Request by surhority of Part 615 Suparvisor of Wells or Part 625 Mineral Wells, of Act 451 PA 1984, as amended. Non-submission anolfor falsification of this information many result in fines and for implications.)    API number														
Required by authority of Part 615 Supervisor of Walks or Part 625 Mineral Wells of Act 451 PA 1994, as mended. Non-submission and/or faithfeation of this information may result in times and/or imprisonment.   R0094   Part 615 Oil/Gas Well   Part 625 Mineral Well   Part 615 Oil/Gas Well   Part 625 Mineral Well   Well man and number   West Bay Exploration   13685 S. West Bay Exploration   Surface Incompanies of premitive   Surface Incompanies of premitive   West Bay Exploration   Surface Incompanies of Previous Part 115 Oil/Gas Well   Part 625 Mineral Well   West Bay Exploration   Surface Incompanies of Previous Part 115 Oil/Gas Well   Part 625 Mineral Well   West Bay Exploration   Surface Incompanies of Previous Part 115 Oil/Gas Well   Part 625 Mineral Well   West Bay Exploration   Surface Incompanies   Surface Incompanies   Previous Part 115 Oil/Gas Well   Part 625 Mineral Well														
	ired by authority of Part 615 Supervisor of Wells or Part 625 Minded. Non-submission and/or falsification of this information may  (Submit 3 copies within 60 days of drilling completion.)    Part 615 Oil/Gas Well   Part 625 Mineral Well et and address of permittee st Bay Exploration				Nor	th/South		Iacksun		West				
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1		rvices				!		heck one)		revious p	ermit nu	ımbers		
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	egan		Date drilling	g completed			<u> </u>	1,701	.,,					
05/15/2010	)					Norvell				Jackso	ın			
1		j	Formation	at total depth	)	1 -						West		
	Log N	A	Black Riv	ver									e of sec	).
	Required by authority of Part 615 Supervisor of Walls or Part 625 Mineral Wells, of Rcd 451 PA 1984 as   Received Part 615 Outper													
N.D. IV42.U	Required by authority of Part 615 Supervisor of Wellia or Part 625 Minaral Wells, of Rad 451 PA 1984 as presented in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment. In the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment in the sandro impleamment													
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11 3/4"	424'	150 lite/	150 A	surface										
		_				 						ļ		
5 1/2"	4842'			3300"		†						<del>                                     </del>		***************************************
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		<del> </del>							p103	1 3001	1 110	LIITO		100
						<u></u>								
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Submit 3 copies within 60 days of drilling completion.)														
13685 S. West Bay Shore  Suite 200  Traverse City Mi, 49684  Name and address of drifting contractor Advanced Energy Services P.O. Box 85  South Boardman Mi.  49680  NE 14 of SE 1/4 of NW 1/4 Section 27 T 4S R 2  Date drilling began  Date drilling completed  05/15/2010  105/11/2010  105/11/2010  106/15/2010  107/11/2010  108/16														
See		attacheu		- Ull ection	ial				<del> </del>					
West Basy Exploration   Part 625 Mineral West   West Basy Exploration   Surface Society   West Basy Exploration   Surface Society   Sur														
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				Cambini	ool / Mochania	-11/i-								Po-
	Brand			Geophysi		ar Logs (iis	st each type	run)		l noned i	ntervals			
Unable to r		lateral	-							Logged i	TICO VAIO			
01.0010 .0.1	Submit 3 copies within 68 days of drilling completion.)  Part 615 OII/Ges Well   Part 625 Mineral Wel: West Bay & Boyd #2-27 HD 1  I 186													
Abada B					000cd c=3 -3 110				·					***************************************
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06/22/2010			**					JUM	wy	\rightarrow\lambda_{\infty}	L&	h		
			t to: OF				OHALITY							

EQP 7200-5 (rev. 8/2004)

MICHIGAN DEPT OF ENVIRONMENTAL QUE PO BOX 30256, LANSING, MI 48909-7756

	FORMATION REC RD Attach additional sheets if necessary	API number	Permit num 60094	ber/Deepening number
Elevation used	Geologist name	Tops taken from		
1043	Fowder/Baker/Vancycle	Dritler's log	Sample log	Fiectric log

_		Formation			Formation
From	To	(type, color, hardness)	From	То	(type, color, hardness)
Note: if well where appro		led, add true vertical depth formation tops			
surf	222(log)	Drift- Unconsolidated sand and gravel			
222	290	Shale& Siltstone- brn-gy-Grn, silty at top organic at base			
290	1230	Shale-Coldwater- Md-dk Brn- Blk,Silty, incr organic at base			
1230	1370	Sunbury Sh/Berea siltstone-Sh, Md Brn-Blk Silty,pyr. mixed w/siltstone, SSO-Lt md brn, Arg			
1370	15	Antrim-Dk Brn-Blk,Pyrand incr organic at base,SG incr toward			
1554	1622	base Traverse Fm- Limestone, Dk Brn- md Brn, Dns, Pyr, Dolomite, Md Gy- Gy, Dns			
1622	1744	Traverse Limestone-Md Brn-lt Brn Vfxln,Hd,			
1744	1978	Shale intbd w Dolomite and Lmst, Md Brn-Gy, Vfxln, Dns, Pos Dundee@1728'-Brn-Lt brn,Poor Samp,Pos Cvgs			
1978	2200	Detroit River- Anhydrite and Dolomite/Limestone, Lt-Md Brn Dns,VfxIn in pt,NS			
2200	2416	Bass Island/Bois Blanc- Dolomite,Anhydrite & Limestone AA			
2416	2685	G-Unit-Dolomite-Arg,Hd grading to Anhydrite- Lt-md Gy Brn			
2685	27 <b>6</b> 6	C Shale-Gy-rdBrn, W/Dolomite and Anhydrite,Lt gy-Brn-bf Poor Samp.l			
2766	2972	B Evap-Anhydrite Wh-Lt Gy W/Dolomite-Vfxln, Lt-md Gy, Intbd at base with Anhy. AA	If well wa	as cored, attach co	re description
2972	3160	Dolo &Limst-Wh-lt Gy,Dns,Anhydritic @3110-Wh, Dns	D	RILL STEM TEST	DATA
3160	3386	Niagaran-Dolomite,AA,Md Gy, VfxIn Intbd W/Anhydrite AA,V porous 2880'-3300'			
3386	3884	Clinton/Cinn-Dolomite, Arg, hd, dk gy, grd to lt gy intbd w/Lmst,lt-md gy Dns			
3884	4212	Utica- Shale, Gy-Grn,Gummy-Hd			
4212	4526	Trenton-Dolo, Lt -Md Gy,Dns,W/ Lmst @ 4236'-4526' Lt-Md Gy Brn,Vfxln,			
4526	TD	Black River- Dolomite,Md Brn- GyBrn,SO&G@4590'			
	Under PN 60011				

4311	5102	discriptions of his cuttings after drilling window Dolomite- Lt Gy - Lt Brn, fxln,so &G, G cut & Flu ,Tr Frac,Partial loss of returns	
			LIST ATTACHMENTS
	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		
			OFFICE OF GEOLOGICAL SURVEY USE ONLY
	}		Reviewed by
			Date of review

Directional Drilling Contractors, LLC.

Job Number: DR100134

Company: WEST BAY EXPLORATION

Lease/Well: WEST BAY/ BOYD 2-27 HD1

Location: NORVELL TWP., JACKSON CO.

Rig Name: MCCONNELL & SCULLY

RKB:

G.L. or M.S.L.:

State/Country: MICHIGAN / USA

Declination: 6.37 DEGREES WEST

Grid:

File name: C:\WINSERVE\PENDING\2010\BOYD227.SVY

Date/Time: 24-May-10 / 12:20

Curve Name: WEST BAY/BOYD 2-27 HD1 (as drilled)

#### Directional Drilling Contractors SURVEY REPORT

#### WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method Vertical Section Plane 158.94 Vertical Section Referenced to Wellhead Rectangular Coordinates Referenced to Wellhead

	Measured Depth FT	Inci Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O . Distance FT	S U R E Direction Deg	Dogleg Severity Deg/100	
	KOP @ TI	F @ 4315	MD							4 7 44	
11	4315.00	.30	80.50	3953.37	-1149.29	825.53	1369.17	1415.05	144,31	.00	ŀ
10	2725	the same of	164.10	3984.33	-1150.63		200707070			16.60	- 15
	4346.00 4379.00	5.20 11.30	164.10	4016.97	-1155.19	826.00 827.27	1370.59 1375.30	1416.41 1420.86	144.33 144.39	16.69 18.49	
	4409.00	18.00	173.60	4045.98	-1162.63	828.57	1382.72	1420.60	144.52	23.55	
	4440.00	25.90	180.70	4074.72	-1174.18	829.03	1393.66	1437.36	144.78	26.84	
	4440.00	20.00	100.70	4014.12	-1174.10	023.03	1000.00	1437.30	144.70	20.04	
	4472.00	34.30	181.70	4102.38	-1190.21	828.67	1408.49	1450.28	145.15	26.30	
	4503.00	40.00	181.70	4127.08	-1208.92	828.12	1425.75	1465.35	145.59	18.39	
	4535.00	45.80	181.70	4150.51	-1230.68	827.47	1445.83	1483.00	146.08	18.12	
	4567.00	51.30	181.40	4171.68	-1254.65	826.83	1467.96	1502.59	146.61	17.20	
	4598.00	57.90	180.70	4189.63	-1279.90	826.37	1491.36	1523.49	147.15	21.37	
	4630.00	64.60	181.00	4205.01	-1307.94	825.95	1517.37	1546.90	147.73	20.95	
	4662.00	72.30	183.10	4216.76	-1337.66	824.87	1544.72	1571.54	148.34	24.82	
	4693.00	79.20	184.90	4224.39	-1367.61	822.77	1571.92	1596.03	148.97	22.96	
	4722.00	83.30	184.50	4228.80	-1396.17	820.42	1597.73	1619.38	149.56	14.20	
	4754.00	86.60	184.50	4231.61	-1427.94	817.92	1626.48	1645.61	150.20	10.31	
	4786.00	89.10	183.40	4232.81	-1459.84	815.72	1655.46	1672.28	150.80	8.53	
	4817.00	89.90	182.40	4233.08	-1490.80	814.15	1683.78	1698.63	151.36	4.13	
	4848.00	89.60	180.70	4233.22	-1521.79	813.31	1712.40	1725.49	151.88	5.57	
	4880.00	90.20	180.00	4233.28	-1553.79	813.12	1742.19	1753.69	152.38	2.88	
	4911.00	92.70	180.70	4232.49	-1584.77	812.93	1771.04	1781.11	152.84	8.37	
	7311.00	UZ.1 U	100.70	1202.10	1001.17	012,00	1111.07	1701.11	102.07	0.57	
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	THE PROPERTY OF STREET					overcomment with the		AND NOVELENBERS	ANTENESTICAL DE	1000000	

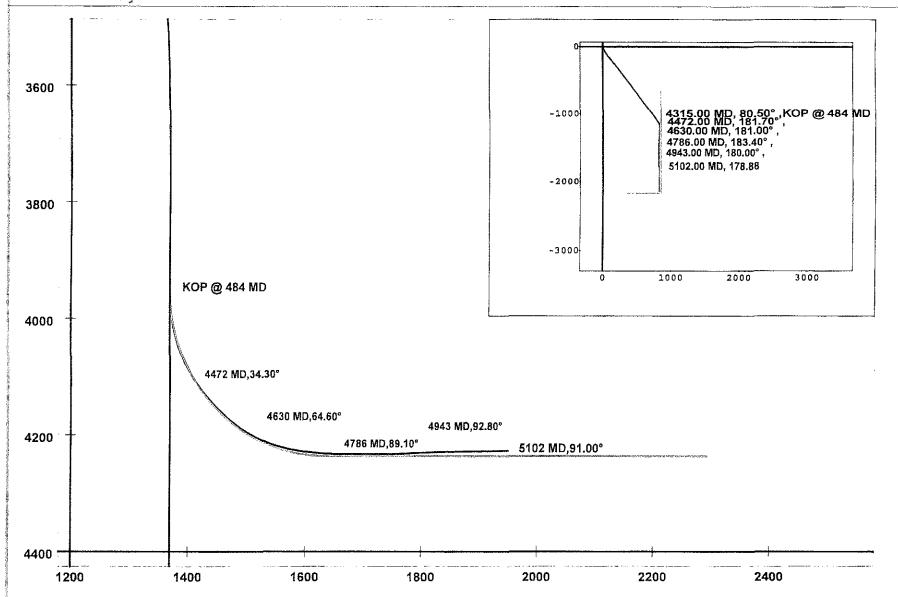
 Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O : Distance FT	S U R E Direction Deg	Dogleg Severity Deg/100
4974.00	91.40	179.30	4229.82	-1647.71	812,92	1829.77	1837.34	153.74	5.05
5036.00	90.70	178.20	4228.68	-1709.69	814.28	1888.09	1893.69	154.53	2,10
5092.00	90.95	178.88	4227.87	-1765.66	815.70	1940.84	1944.98	155.20	1.29
PROJECT	ED TD @	5102 MD	•		_ ****				
5102.00	91.00	179.00	4227.70	-1775.66	815.89	1950.24	1954.13	155.32	1.29

Job Number: DR100134
Company: WEST BAY EXPLORATION
Lease/Well: WEST BAY/ BOYD 2-27 HD1
Location: NORVELL TWP., JACKSON CO.
Rig Name: MCCONNELL & SCULLY
State/Country: MICHIGAN / USA

Declination: 6.37 DEGREES WEST File name: C:\WINSERVE\PENDING\20 Date/Time: 24-May-10 / 12:17



Directional Drilling Contractors, LLC.





#### MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF C.\_JLOGICAL SURVEY

RECORD OF WELL COMPLETION

					D	1 11 1		T. Cont.			
By authority	of Part 615 or P	art 625 d	of Act 451 PA 1994,			nber/deepenin	g permit n				
			r falsification of this		60094	11 / 12		21-075-	60011		
information	on may result in fi	ines and	or imprisonment.			ell (after compl	etion)				
					oil						
			well completion.)		33 5-19 13-05-17	& number					
		☐ Par	t 625 Mineral Well		West Ba	y Boyd #2-2	27 HD 1	100			
lame and address of											
Vest Bay Explor											
3685 S. West E uite 200, Trave											
	The second second				1						
irectionally drilled (	check one)	Previou	us permit numbers		Total dept		~	VD 42201			
- Caracana - Angara								.V.D. 4228'			
urface location	0111		- 10	0.5		e location (if di		2000	_		
	of SW 1/4 Sec	ction 22		2E		of SE 1/4 of	NW 1/4	Section 27	T 4S	F	₹ 2E
ownship		County			Township			County			
lapoleoni		Jacks			Napoleo	The state of the s		Jackso			
3	h/South		East/West		Footages:			2000	East/V		
86' Ft. from So	uth line and 14	40' Ft.	from West line	of Sec.	1590'	Ft. from North	line and	2256' Ft.	from W	est lir	ne of Sec
	Part 615 - c							- mineral well	-		
ate well completed	Producing fo		(s) Injection forma	ation(s)	Date of fire	st injection	Disposal	formation(s)	Solu	tion for	mation(s
il & Gas	Black Rive	er 									
			00115	u ETION							
-110-12			СОМР	PLETION	INTERV	ALS(S)					
Data	Number hole			Dorfo	ration or ana	n halo interval			- V	Op	
Date			244 5400	Perior	ration or ope	n hole interval				es	No
/25/10	open hole	4	311-5102'						X		
	-	_									
									-		
									-		
									-		
	<u></u>					(5)1111 (630-1)					
			CTIMUL ATIC	N BV A	CID OR E	RACTURIN	G				
					CID CIVI					-	
Date	T	Inter		NIDIA	1		Materials a	and amount us	sed		
Date		Inter	val treated	DIV DI A			Materials a	and amount us	sed	-	
Date		Inter		NBIA			Materials a	and amount us	sed		
Date		Inter		DIN BT A			Materials a	and amount us	sed		
Date		Inter		NED! A			Materials	and amount u	sed		
Date		Inter		N B I A			Materials a	and amount u	sed		
Date		Inter		N BT A			Materials a	and amount u	sed		
Date		Inter		N BT A			Materials a	and amount u	sed		
Date		Inter		N BT A			Materials a	and amount us	sed		
Date		Inter		N BT A			Materials a	and amount us	sed		
Date		Inter	val treated				Materials a	and amount us	sed		
	Gravity	Inter	val treated PRO	DUCTIO	ON TEST I	DATA			sed	RHP	and dep
Date  Oil Bbls/day	Gravity °AP1	Inter	val treated	DUCTIO		DATA Water		H <sub>2</sub> S Grains/100		B.H.P.	and dep
Oil Bbls/day	°API	Inter	PRO Condensate	DUCTIO	ON TEST I	DATA		H <sub>2</sub> S		B.H.P.	and dep
Oil Bbls/day		Inter	PRO Condensate	DUCTIO	ON TEST I	DATA Water		H <sub>2</sub> S		B.H.P.	and dep
Oil Bbls/day	°API	Inter	PRO Condensate	DUCTIO	ON TEST I	DATA Water		H <sub>2</sub> S		B.H.P.	and dep
Oil Bbls/day	*API		PRO Condensate Bbls/day	DUCTIO MC	ON TEST I	DATA Water Bbls/da	у	H₂S Grains/100	ft <sup>3</sup> .		
Oil Bbls/day	"I state that I a	m autho	PRO Condensate Bbls/day	DUCTION MC 98	ON TEST I Gas CF/day	DATA Water Bbls/da	у	H₂S Grains/100	ft <sup>3</sup> .		
Oil Bbls/day 200 CERTIFICATION tated herein are t	"I state that I a rue, accurate a	m autho	PRO Condensate Bbls/day  prized by said own plete to the best	DUCTION MC 98	ON TEST I Gas CF/day	DATA Water Bbls/da	у	H₂S Grains/100 supervision a	ft <sup>3</sup> .		
Oil Bbls/day	"I state that I a rue, accurate a or type)	m autho	PRO Condensate Bbls/day	DUCTION MC 98	ON TEST I Gas CF/day	DATA Water Bbls/da	у	H <sub>2</sub> S Grains/100 supervision a	ft <sup>3</sup> .	ction.	

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

PO BOX 30256

LANSING MI 48909-7756

121481	ADD
--------	-----

Geological Survey No.

#### MICHIGAN DEPARTMENT OF PUBLIC HEALTH WATER WELL AND PUMP RECORD

	77	7074	1
	M	7671	3
PERMIT	NUM	SER	_

1 LOCATION OF WELL				AIL VE				PENMI	NUMBER
County Township Nare		Fraction			Section		Town Numbe	7	Renge Numbe
JACKSON	NORVELL	SE 1/	NE 1/4	NE 1/4	2	7	4	S	2 5
stance and Direction From Road Intersection  12148 LADD			A.	WNER C Idraes Sen ell Locasti		12148 L	T A. BRISTI ADD LYN MI 4		
BROOKLYN MI 49230 reet Address City of Well location					[A.1]				
South William William Carlotte Carlotte				ELL DEF	PTH;	Date	Completed		·····
N CASE RD				18	38 ft.		3/6/99	NEW	/ WELL
M N N N			5 D		METHOD:	•	ROTA		
W LCT	1400 0-	2451	Į.	SE:		:	DOME	STIC	
1/2 Mile	LADD RD	& ARDCASTL	7 C		PLASTIC Diameter 5	to 173 ft.	. depth	Heigh	t: ABOVE
S lor	attitude: WAMPLE	Ī			<b></b>			Surfac	ce 1*
1 Mile			<u> </u>		Grouted Dr		ameter	Welgi	nt SDR 21
2 FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM		···	9" to 173 ft.	. оврст		Drive	Shoe?
SAND	20	20	8 80	REEN:	The said	NONE	Dless	eter * N	and mail
YELLOW CLAY	8	28	]		Type:	NONE	DIAM	Hater N	Ominai
GRAY CLAY	24	52							
GRAVEL	3	55	1	FITTING	S		,		
GRAY CLAY	112	167	9 5		VATER LEV	/E) •		<del></del>	
SAND ROCK	21	188	}		below land				i. Klasse –
PUMPING LEVEL			40.5						Flow?
EST WITH AIR	<del> </del>		10 F		LEVEL:				
100+ GPM				52 ft.	atter 2 firs.	pumping	st 12 G.P.M	<b>.</b>	
	, <u>,,</u>	<u> </u>	11 V	VELL HE	AD COMPL	ETION	PITLES	S ADAI	TOR
DECENTED	A 6		12 V	VELL GR	OUTED?	Z	*		<del></del> -
RECEIVED SEP	K1	e ven			EAL From ( gs of came				-
	MICHOLPT OF THE	l., riden (d.	UPLITY 13 N				TAMINATIO		<u> </u>
			'				50 ft. Direct		
	DC1-0	8-1999		Well		ироп сот	pietion?		
	Drinking Value & ka Greenet We	ijajograf arnietije Pr. Se istjekerijan	14 P	133.173.		<del></del>	ED JACKE		
		รักสมวิสายใหม่	1	177			EU JAGRE: NI-128BC I		/OLTS 23/
CRIBLEY OFFICE NOTES				Le		p Pipe 75	ft. capacity		
			}		IRE TANK				
WELLS AWC 5-1 t* PVC 75 CDCW14574P18609							MTROL (O) 2 Capacity 6		-
15 REMARKS, ELEVATION, SOURCE OF I	DATA, ETC.	16 WAT	ER WELL		ACTOR'S	····			
NO LINER	• • • •		This well wa knowledge	us drilled wax and belief.	der my jurisdko		report is true to		
17 RIG OPERATOR'S NAME	N PEARCE				NO CO., INC. ENESS NAME	<del></del>		81-05 GISTRATE	ON NO.
F7d 2/89	IT CARGE	<u>.</u>	Signed:	ac	L'Address	CK	oter Chelda	Rd., Dex Dete	9/1-1/
	+ 1:= - <del>-</del>		(	1	IHORIZED RE				• •
IMPORTANT: File with deed.	EOLOGICAL	CIT TEXT	יי מער מער		uthority: a completion: i	Act 368 PA	1978		

TAX NO:   VATER V  Completion is require	WELL AT	ID PUM hority of Pa	ROTECTION DIV DN P RECORD PERMIT NO: at 127 Act 368 PA 1978
	ure to comply		
County Township Name		Fraction	Section No. Town No. Range N
JACKSON NORVELL		5W1/45	6145W114 22 45 2E
Distance and Direction from Road Intersection			3. OWNEROFWELL LARRY KLOPFER
M MILE EAST OF BETTES H	والإنها		Address 12160 LADD RD.
MILE EAST OF BETTES HON N. SEDE OF LAND RD.			BROOKLYN, MI
			Address Same as Well Location    Yes    No
Street Address & City of Well Location  Locate with 'x' in Section Below	Sketch Map		4. WELL DEPTH: Date Completed X New Well
A STANCE OF THE	ontion map		114 1. 5 /20/98 Replacement W
191			5. Cable Tool Rotary Driven Du
			Hollow Rod Augor/Bored Jetted
W A ADD R	11.		
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			8. USE: ☐ Household ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat Pump
LADD R	D		Test Well Type (the Public T
1			
1 MLE			7. CASING: Steel Threaded Height: Above/Belo
2. FORMATION DESCRIPTION	THICKNESS	DEPTH TO BOTTOM OF STRATUM	Other
	STRATUM	STRATUM	Diameter: in. to ft. depth Weight: AVC
			5_in. to 108ft. depth
54,00	127	a.7	BORE HOLE: Drive Shoe
CLAY	64	91	Diameter: 8 in. to //4 ft. depth Shafe Packer
		100	in, toft, depth
GRAVEL + CLAY SAND + GAAVEL	/2	103	8. SCREEN: Not Installed Gravel-Packed
SAND + GARVEL		114	Type Journal Diameter 4" Stor/Gauze 220 Length: 65
			Set Between 108 It and 1/4
	<u> </u>	<del> </del>	FITTINGS: K-Packer Bremer Check
			Blank Above Screenft. Other
Co			9. STATIC WATER LEVEL:
SE SELLE VI			ft. Below Land Surface
( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	_	-	10. PUMPING LEVEL: Below Land Surface
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			50 ft. After 2 hrs. Pumping at 12 G
会記で PULA® 2 1998			Plunger Baller Air Test Pu
The Part of the Pa		-	11 WELL HEAD COMPLETION:
			Pitiess Adapter 2 12" Above Grade
TATH W			Basement Offset Woll House
TATH D		<del>                                     </del>	12. WELL GROUTED? No X Yes From to
	-		
<b>9</b>			No. of Bags 5/2 Additives BF, LSEAL
			13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:
With the State of	_		Type SEPTIC Distance 50 + tr. Direction No.
USE A 2ND SHEET IF NEEDED	Ш		Typett. Direction
15. ABANDONED WELL PLUGGED? Yes No			14. PUMP: Not Installed Pump Installation Only
Casing Diameter In. Depth ft.			Manufacturer's Name MYBRS  Model Number TOISA HP IS Volts 2  Length of Drop Pipe BO ft. Capacity IO TYPE: Submersible Uset Other
PLUGGING MATERIAL: Neat Cement	Bentonite	e Slurry	Length of Dron Pine 20 It Canadia
☐ Cement/Bentonite Sturry ☐ Concrete Grout	Bentonite	- Chios	TYPE: Submersible Jet Other
No. of Bags Casing Removed?	Yes [	No	PRESSURE TANK:
16. REMARKS: (Elevation, Source of Data, etc.)	1967 N. Part II. Salar Paler Ray III. Salar Ray		Manufacturer's Name WEL-X-TROL
			Model Number WA-30 2 Capacity 20 Gallons
	18, WATER	WELL CON	TRACTOR'S CERTIFICATION:
	This we	ell was drilled	under my jurisdiction and this report is true to the best of my,
17. DRILLING MACHINE OPERATOR:	knowle	dge and belie	2029
<b>K</b> Employee ☐ Subcontractor	REGISTE	RODUSINESS W	# Sons Inc. 2039 REGISTRATION NO.
Name CHARLES E TORNOW	Address	, 27LB	M-50 TEPTON, MI 49287  Date 5-20-98
	1444		

GEOLOGICAL SUMEY NOT 1984.

#### MY HIGAN DEPARTMENT OF PUBLIC HEATTH

### WATER WELL AND PUMP RECORD

			$\checkmark$
			7
DEG	M TIMS	IMRE	2

1 LOCATION OF WELL		PART 127	ACT 368, P.A.			
County Jackson	Township Name Norvell		SW 1/4 S	SE 1/4 SE Number	Town Number T4S N/S	Range Number RZE E/W
Distance And Orection From Road Int. 1/2 mi E Bettis & Let	tersection dd Roads	Africania a substituti territa da a a a a a a a a a a a a a a a a a	1	3 OWNER OF WELL Haligu	S	
12180 Ladd Rd			Mughin	IV Address 12180 Ladd R Brooklyn, MI	49230	
Street Address & City of Well Location	n			Address Same As Well Locatio		No
Locate with "X" in Section Below	Sko N	tch Map:		4 WELL DEPTH: (completed) 1.80 ft	Date of Complete 11/30/	<b>′</b> 83
W	Bettis	Æ		Cable tool Hotlew rod Auger  6 USE: 23 Domestic Type I	Jetted	Dug Type III Public
	Ladd	<b>*</b>		☐ Irngation ☐ Type II ☐ Test Woll ☐ Type I	a Public	Heat pump
1 Mile			· · · · · · · · · · · · · · · · · · ·	/ CASING. Stoot Thread Diameter Plastic Welde	d Surface	ft
2 FORMATION DESC	CRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	in to 156 It depth in to 156 It depth frouted Orill Hole Diameter	Weight	
Sand and gravel		21	21	. 8 in to 156 ft. depth in to ft. depth 8 SCREEN:	<u> </u>	No
Sand, gravel and sh	ale	89	1.10	Fype	<b>XX</b> Not in Diameter	
Dirty shale, sand a	nd gravel	24	134	Stot/Gauze1	t and	ft.
Sand, gravel and sh	ale	14	148	FITTINGS K-Packer C		Bremer Check
Sandstone		32	180	# STAFIC WATER LEVEL:  43  11. below land	surface	Flow
				10 PUMPING LEVEL: below land st		GPM
	- 10			ft. after hrs.		į.
				11 WELL HEAD Polless at COMPLETION Basemen		bove grade
					Yes From 1	
				No of bags of compan	onite Other _	
		<del></del>		13 Nearest source of possible cont		
6л:-'.	TRECEIVED 1	and a specimen		Type Dista		
	Boot. of Public Heal	<u>(₹)</u>		Well disinfected upon completion  14 PUMP: X Not Installed		No Allation Only
	JUN 71984	<del></del>		Manufacturer's name		
	i ož Envirovet entat ar rational Health - GWC			Model number	ft, capacity	G P.M.
				TYPE: Submersible PRESSURE TANK:	Jet	
USE A 2ND SHEET IF	· NEEDED			Manufacturer's name		Gallons l
15. Remarks, elevațion, source o		FYEDA ALO	This we	R WELL CONTRACTOR'S CERTIF It was dulled under my jurisdiction ar	ICATION:	
8 GHO	*CORRECTED BY **ADDITION BY	~		est of my knowledge and behaf.  Diey Well Drilling,  REGISTERED BUSINESS NAME	Inc. 1	67 - 1517
80.	ELEVATION		Address	6655 Brooklyn Rd.	negistratio	IN NO.
D67d (Rev. 10-80)	DEPTH TO SHOK		Signed		lle Date 5,	
Seria (max a.od)				(		



#### Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.



Import ID: Tax No:

Elevation:

Latitude: 42.10084738

Failure to comply is a misdemeanor. Permit No: 11701 County: Jackson Township: Norvell Town/Range: Section: Well Status: WSSN: Source ID/Well No: 04S 02E 27 Well ID: 38000006689 Distance and Direction from Road Intersection: 4 MILE E OF LADD RD & BETTIS RD

Well Owner: NEIL WELCH

Well Address: Owner Address: Longitude: -84.18260323 1215 LADD RD 305 CASS AVE

Method of Collection: Interpolation-Map JACKSON, MI 49203 Drilling Method: Rotary Pump Installed: Pump Installation Only: Well Depth: 196.00 ft. Well Use: Household Pump Installation Date: HP: 0.50 Well Type: New Date Completed: 8/1/2003 Manufacturer: Aermotor Pump Type: Submersible Casing Type: PVC plastic Model Number: A-12-50 Pump Capacity: 12 GPM Height: Casing Joint: Unknown Drop Pipe Length: 65.00 ft. Pump Voltage: Casing Fitting: Shale packer/trap **Drop Pipe Diameter: Drilling Record ID:** Draw Down Seal Used: Diameter: 5.00 in. to 168.00 ft. depth Pressure Tank Installed: Yes Pressure Tank Type: Unknown Manufacturer: Well-Mate Borehole: 8.00 in. to 168.00 ft. depth Model Number: WM-6 Tank Capacity: 5.0 Gallons 4.75 in. to 196.00 ft. depth Pressure Relief Valve Installed: No Static Water Level: 43.00 ft. Below Grade (Not Flowing) Depth to **Formation Description Thickness** Unrestricted Flow Rate: Yield Test Method: Test pump **Bottom** 

omestricted riow rate.	ricia rest metrica.					
Well Yield Test:		Clay Sand Gravel	8.00	8.00		
Pumping level 47.00 ft. after 1.00 hrs. at 20 GPM		Sand & Gravel W/Stones	4.00	12.00		
		Sand & Gravel	25.00	37.00		
		Clay	18.00	55.00		
Screen Installed: No Intake: Bedrock Well		Clay Sand Gravel	31.00	86.00		
		Sand & Gravel Silty	19.00 50.00 7.00 34.00	105.00 155.00 162.00 196.00		
		Clay Sand Gravel				
		Sand & Gravel				
		Gray Sandstone				
Well Grouted: Yes Grouting	Method: Unknown					
Grouting Material Bags Additives Depth		Geology Remarks:				

0.00 ft. to 168.00 ft. Bentonite slurry 16.00 None

**Nearest Source of Possible Contamination:** Drilling Machine Operator Name: TBURKHOLDER/MSEXTON

Direction Employment: Employee Distance Type Septic tank 50 ft. Southwest

Contractor Type: Water Well Drilling Contractor Reg No: 167

Business Name: FOX & BOLEY WELL DRILLING, INC **Business Address:** 

> Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of

> my knowledge and belief.

Signature of Registered Contractor

Other Remarks: EQP-2017c (4/2010)

General Remarks:

Wellhead Completion: Pitless adapter



### Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

County: Jackson

Section:

Town/Range:



Source ID/Well No:

Township: Norvell

WSSN:

Well Status:

Import ID: Tax No:

Failure to comply is a misdemeanor.

Permit No: 8613

W-II ID. 00000004000	04S 02E	27	Active			
Well ID: 38000004062	Distance and Di	irection fron	Road Intersect	tion:		
	2/10 MI E. OF LA	ADD RD. & B	ETTIS RD			
Elevation:						
-	Well Owner: HOLLIS HAMM					
Longitude: -84.18806133	Well Address: Owner Address:					
Method of Collection: Address Matching-House Number	12161 LADD RI BROOKLYN, M		23.22	161 LADD RI ROOKLYN, M		
	BROOKLIN, W	1 43230	Di	NOOKLIN, W	1 43230	
Drilling Method: Rotary	Pump Insta	alled: Yes	1	Pump Install	ation Onl	y: No
Well Depth: 212.00 ft. Well Use: Household	Pump Insta	allation Date	:	<b>HP:</b> 1.00		
Well Type: New Date Completed: 7/7/2000	Manufactu	rer: Aermo	otor	Pump Type:	Submer	sible
Casing Type: PVC plastic Height:		iber: A+20		Pump Capac	-	SPM
Casing Joint: Other		Length: 68		Pump Voltag		
Casing Fitting: Drive shoe	Drop Pipe			Drilling Reco	ord ID:	
B1 - / - 500 / - /500 B / - /		Seal Used:				
Diameter: 5.00 in. to 176.00 ft. depth		ank Installe				
		ank Type: rer: Well-N				
Borehole: 8.00 in. to 176.00 ft. depth		nber: WM-		Tank Capac	itus 14 C	Callone
borenoie: 6.00 m. to 176.00 k. depth	***************************************	Relief Valve I			ity. 14.0	Galloris
	i ressaire r	tener valve i	inotalica. No			
Static Water Level: 45.00 ft. Below Grade (Not Flowing) Unrestricted Flow Rate: Yield Test Method: Test pump		Formation	Description	т	nickness	Depth to Bottom
Well Yield Test:	Sand & Gra	ivel		2.0	n	2.00
Pumping level 46.00 ft. after 1.00 hrs. at 20 GPM	Clay	1701		7.0		9.00
	Sand & Gra	ivel		6.0	MAX.	15.00
	Clay			4.0		19.00
Screen Installed: No Intake: Bedrock Well	Clay Sand	Gravel		65.	00	84.00
	Sand & Gra	ivel		11.	00	95.00
	Sand & Gra	ivel		13.	00	108.00
	Clay Sand	Gravel		22.		130.00
	Gray Sands	stone		2.0	0	132.00
	Clay Sand			20.		152.00
	Sand Grave	THE RESERVE OF THE PARTY OF THE		8.0	200	160.00
	Sand & Gra			11.		171.00
Well Grouted: Yes Grouting Method: Unknown	Gray Sands	stone		27.	00	198.00
Well Grouted: Yes Grouting Method: Unknown Grouting Material Bags Additives Depth	Geology R	omarke:	(Continued Or	rage 2)		
Bentonite slurry 18.00 Other 0.00 ft. to 175.00 ft		emarks.				
Joint Starty Total Cultin	***					
Wellhead Completion: Pitless adapter						
Manager and Angel and Ange						
Nearest Source of Possible Contamination:	Drilling Ma	chine Opera	ator Name: TE	BURKHOLDE	R/HHARF	RIS
Type Distance Direction	Employme	nt: Employ	ee			
None						
			(Continued of	on page 2)		
General Remarks:						
Other Remarks: Casing Joint:GLUED, Grouting Additive 1:QUICK-GRO	UT/BENSEAL		2450	Service Company of the  1.26.26		
FOP-2017c (4/2010)			- 040	to of Michiga	10/00	12004 2:27 DM

Page 1 of 2

ATTENTION WELL OWNER: FILE WITH DEED

State of Michigan

10/26/2001 3:37 PM

GEOLOGICAL SURVEY SAMPLE No.			
MAR 3 o 1973	WATER	WELL RE	CORD MICHIGAN DEPARTMENT
1 LOCATION OF WELL	ACT 2	04 PA 19	OF PUBLIC HEALTH
County Township Name	<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	Fraction	Section Number Town Number Range Number
Jackson Norvell Distance And Direction from Boad Intersections		SW <sub>4</sub>	SWA SWA 22 T4S N/S. REE E/W.
NE corner Bettis & Ladd Ros	₫s		3 owner of well: Joseph Natter
Ladd Road			Address 1005 Lakeview
Ladd Roed Street address & City of Well Location Locate with X in Section below Sec	otch Maps		Brooklyn, Michigan 49230  4 WELL DEFTH: (Gomeleted) Date of Completion
<u></u>	, core maps		180 ft, 2/7/73
	-Bet	tis	5 🗷 Cable tool 🔲 Rotary 🔲 Driven 🔲 Dug
w			Hollow red
			Irrigation   Air Conditioning   Commercial
	Ladd	<b>=</b> .	Test Well
			7 CASING: Threaded Welded Hospit: Above/Reck Dlam. Surface 1 ft.
2 FORMATION	THICKNESS	DEPTH TO BOTTOM OF	4 in. 10 164 ft, Depth Weight 11 lbs./ft.
rotigiation ;	STRATUM	STRATUM	in, to ft. Dopth Drive Shoe? Yes No 8 SCREEN:
Send	15	1.5	Typo: Dia.:
•			Slot/Gauze Length
Shale and gravel	110	125	Set betwoonft, andft.
Shale	В	137	Fittings:
			9 STATIC WATER LEVEL
Gravel	8	145	45 ft, below land surface
Shale	10	155	50 ft, after 2 hrs. pumping 20 g.p.m.
•			
Gravel	3	161	ft. afterhrs. pumping
Shale	4	165	Iron (Fo) Chloridos (Cl)
Out to be a			Hardnoss Other
Sandstone	15	180	12 WELL HEAD COMPLETION:   In Approved Pit
			Pitless Adaptor 12" Above Grade
			13 Well Grouted? Yes X No Neat Coment Bentonite
			Depth: Fromft. toft.
			14 Nearost Source of possible contamination
			nensfeet Direction Type Well distributed upon completion Yes No
			15 PUMP: Que installed as yet
			Manufacturor's Name
			Model Number HP Volts G.P.M.
			Typu: Submersible
			Jet   Reciprocating
USE A 2ND WHEET IF HEEDED			
16 Remarks, elevation, source of data, etc.			WELL CONTRACTOR'S CERTIFICATION:
ADDED INFO. BY DRILLER, ITEM ML			l was drilled under my jurisdiction and this report is true ust of my knowledge and belief.
		Fox P	rethers Drillers, Inchesistrations.
*CORRECTED BY		Address	-6655 Brook) vo Pood Tackson What
**ADDITION EN			-6655 Brooklyn Road, Jackson, Michigan Michigan April 1920
D67d 100M (Rev. 12-68)		j Signed ⊊	BUTHORIZED REPRESENTATIVE / A. Date 2/20/73

# Appendix "5"



#### **APPENDIX 5**

SPL Inc. 459 Hughes Drive Traverse City, MI 49686

Phone: (231) 947-5777 Fax: (231) 947-1072

#### **GENERAL WATER ANALYSIS**

WorkOrder: T10080299 LANTIS 2-30 WELL

Lab ID:

T10080299001

Date/Time Received: 8/26/2010 10:51

Water

Matrix:

Sample ID: LANTIS 2-30 WELL

Date/Time Collected: 8/19/2010 12:30

Method	Parameters	Results	Analyzed
	ANION		
EPA 310.1	Alkalinity, CO32- as CaCO3	ND mg/l	09/02/2010 14:19 by MD
EPA 310.1	Alkalinity, HCO3- as CaCO3	230 mg/l	09/02/2010 14:19 by MD
EPA 325.2	Chloride	174000 mg/l	09/10/2010 16:27 by MD
EPA 375.4	Sulfate	315 mg/l	09/09/2010 14:20 by MD
EPA 376.2	Sulfide	ND mg/l	09/09/2010 15:49 by JS
	CATION		
EPA 200.8	Calcium	28400 mg/l	09/09/2010 21:40 by JS
EPA 200.8	Magnesium	4870 mg/l	09/09/2010 22:39 by JS
EPA 200.8	Potassium	3000 mg/l	09/09/2010 22:39 by JS
EPA 200.8	Sodium	37600 mg/l	09/09/2010 21:40 by JS
EPA 200.8	Barium	2.25 mg/l	09/09/2010 22:39 by JS
EPA 200.8	Iron	81.4 mg/l	09/09/2010 22:39 by JS
	OTHER		
EPA 150.1	рН	6.1 SU	09/03/2010 11:59 by MD
EPA 120.1	Resistivity	0.0460 ohm-meter	09/03/2010 00:37 by MD
ASTM D1429	Specific Gravity	1.193	09/08/2010 14:39 by JS
	Total dissolved solids (calculated) =	248498.65	

Report ID: 19214 - 1369933

Printed: 09/13/2010 16:48



#### **APPENDIX 5**

459 Hughes Drive Traverse City, MI 49686

Phone: (231) 947-5777 Fax: (231) 947-1072

#### **GENERAL WATER ANALYSIS**

WorkOrder: T10080299 LANTIS 2-30 WELL

Lab ID:

T10080299001

Date/Time Received: 8/26/2010 10:51

Matrix:

Water

Sample ID: LANTIS 2-30 WELL

Date/Time Collected: 8/19/2010 12:30

Method	Parameters	Results	Analyzed
	ANION		
EPA 310.1	Alkalinity, CO32- as CaCO3	ND mg/l	09/02/2010 14:19 by MD
EPA 310.1	Alkalinity, HCO3- as CaCO3	230 mg/l	09/02/2010 14:19 by MD
EPA 325.2	Chloride	174000 mg/l	09/10/2010 16:27 by MD
EPA 375.4	Sulfate	315 mg/l	09/09/2010 14:20 by MD
EPA 376.2	Sulfide	ND mg/i	09/09/2010 15:49 by JS
	CATION		
EPA 200.8	Calcium	28400 mg/i	09/09/2010 21:40 by JS
EPA 200.8	Magnesium	4870 mg/l	09/09/2010 22:39 by JS
EPA 200.8	Potassium	3000 mg/l	09/09/2010 22:39 by JS
EPA 200.8	Sodium	37600 mg/l	09/09/2010 21:40 by JS
EPA 200 8	Barium	2.25 mg/l	09/09/2010 22:39 by JS
EPA 200.8	tron	81.4 mg/l	09/09/2010 22:39 by JS
•	OTHER		
EPA 150.1	рН	6.1 SU	09/03/2010 11:59 by MD
EPA 120.1	Resistivity	0.0460 ohm-meter	09/03/2010 00:37 by MD
ASTM D1429	Specific Gravity	1.193	09/08/2010 14:39 by JS
• •	Total dissolved solids (calculated)	= 248498.65	•

Page 3 of 8

Printed: 09/13/2010 16:48