

Baldwin Lynch Energy Corporation
Application for Conversion to Injection Well
Montana Board of Oil and Gas Conservation

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**MONTANA BOARD OF OIL &
GAS CONSERVATION • BILLINGS**

BALDWIN LYNCH ENERGY

July 11, 2019

Montana Board of Oil and Gas Conservation
2365 St. John's Avenue
Billings, Montana 59102

Attn: Mr. George Hudak
Underground Injection Control Coordinator

Re: Request for Underground Conversion and Subsequent Injection Permit

1-16 Well (25-009-21056)

T9S-R22E-Section 16: E2NE, NESE

Dear Mr. Hudak:

Contained is an Underground Injection Control Application by Baldwin Lynch Energy Requesting the granting of authority to convert Baldwin Federal 1-16 to an injection well. BLE is requesting the application to be placed on the earliest docket for the Montana Board of Oil and Gas Conservation hearings to be conducted in Billings, Montana, on August 15th, 2019.

Should you have any questions regarding this application, please contact Rick Baldwin (Baldwin Lynch Energy) at 775-691-3074.

Thank you for your time,

Richard Baldwin



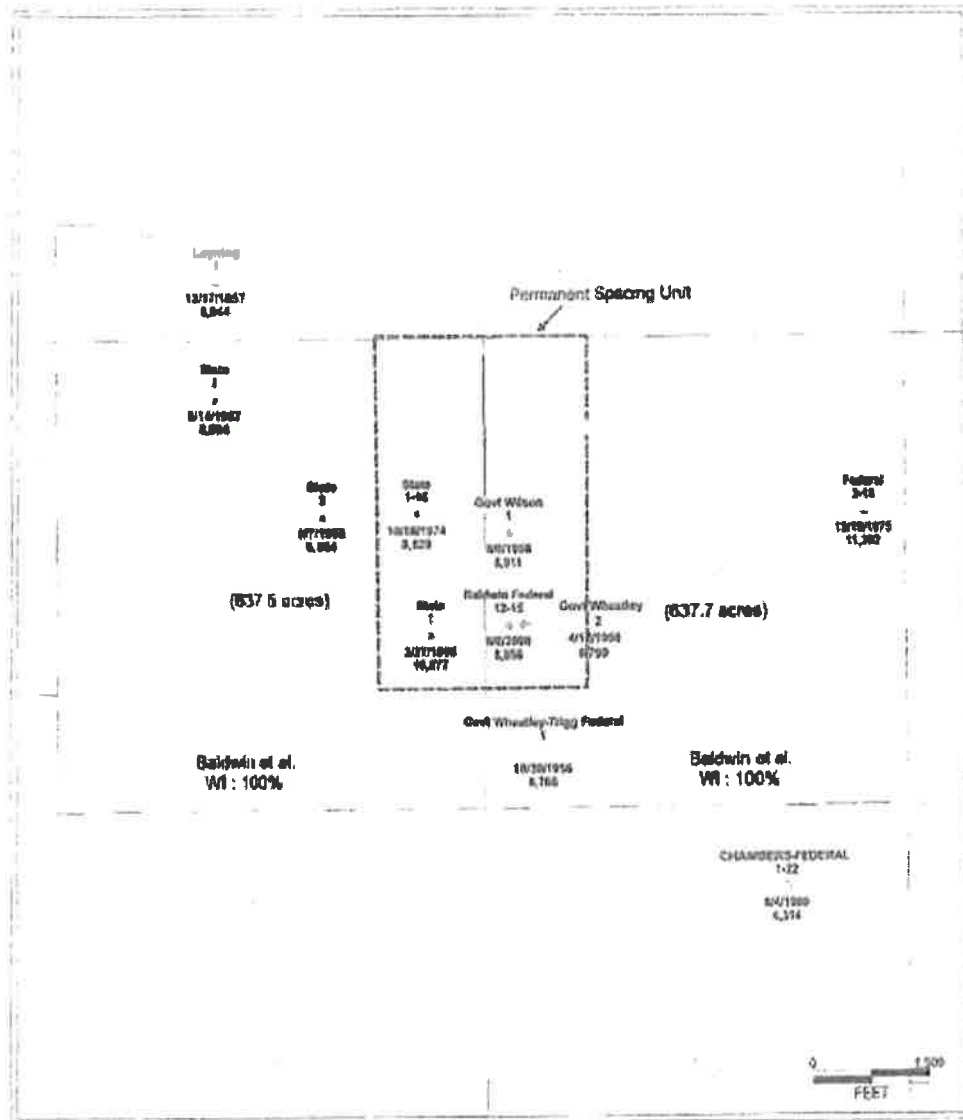
Baldwin Lynch Energy

President /

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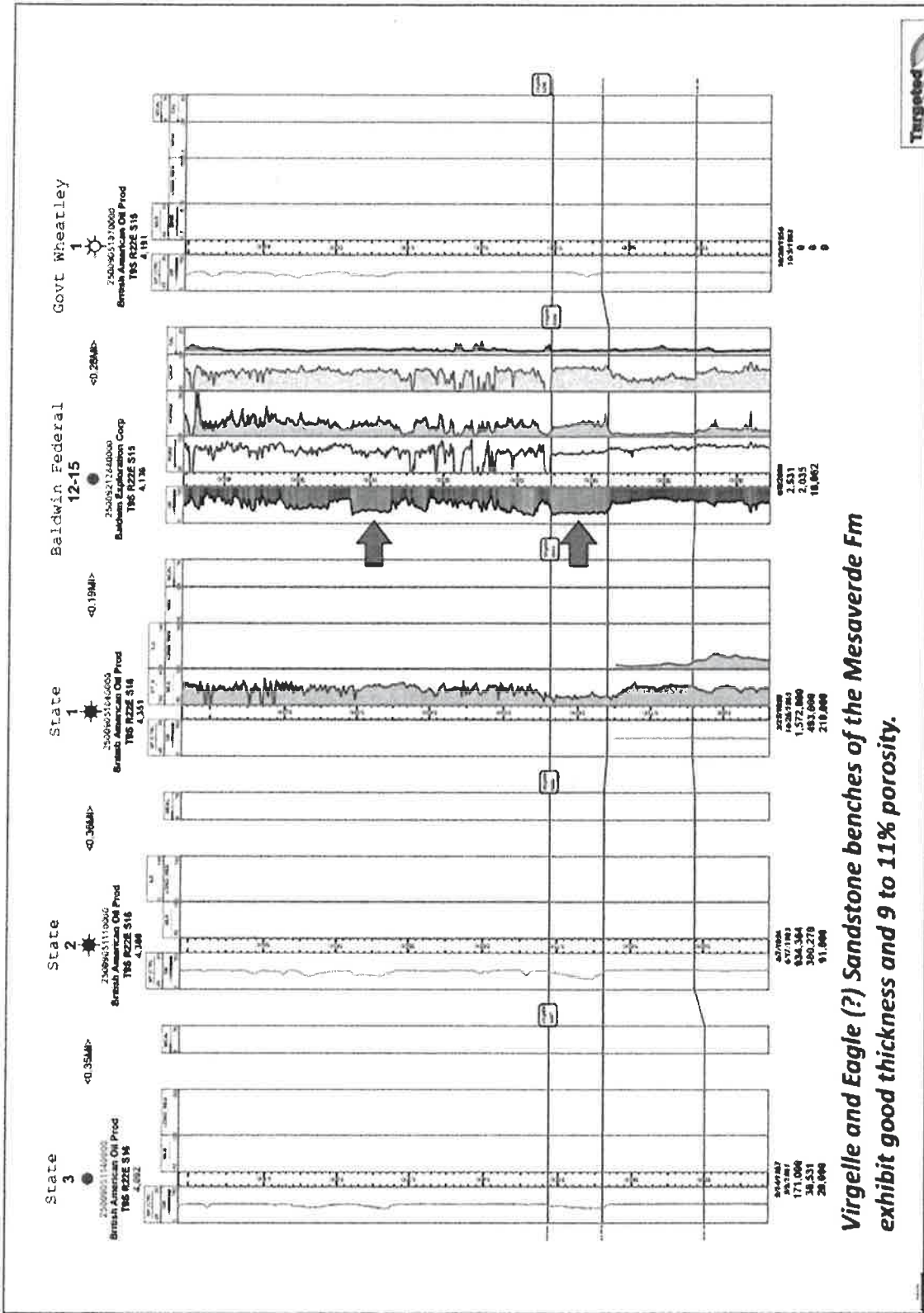
Township 9 South, Range 22 East, MPM
 Section 15: All
 Section 16: All

Lease Ownership Map

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Virgelle and Eagle (?) Sandstone benches of the Mesaverde Fm exhibit good thickness and 9 to 11% porosity.

Candidate Water Disposal Zones



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Underground Injection Control (UIC) Permit Application
North Clarks Fork – Wildcat Field - Carbon County, Montana

Baldwin Lynch Energy

1-16 Sec. 16, T9S, R22E

API – 25-009-21056

The following is submitted in support of the application to permit the conversion of the Trigg 1-16 well for the purpose of water injection into the Virgelle Formation. As required by Rule 36.22.1043 of the rules and regulations of the Montana Board of Oil and Gas Conservation.

- **1.(a) Well Location**

Trigg 1-16 has been proposed for the conversion to a water injection well. The location NWSENE (1956.0 FNL 837 FEL) of Sec. 16-9S-22E within the North Clarks Fork Wildcat Field in Carbon County. Currently the well is shut in.

- **1.(b) Wells within Quarter mile**

There is currently one producing well in the proximity of Trigg 1-16 and that is the Baldwin Federal 12-15 (API 25009212840000).

- **1.(c) Location of All Pipelines**

Injection water will go into the Trigg 1-16. The injection water will be transported via pipeline from the Baldwin Federal 12-15.

- **1.(d) Area Producing Formation, Water Well Information**

The Lakota (A) formation is the main objective to be produced using the Baldwin Federal 12-15, with measured depth of the Lakota Formation for that well is at a depth of 8700' to 8720'. The fresh water data was obtained from the Montana Department of Natural Resources, Water Resources Division. According to the Montana Bureau of Mines and Geology, there is one ground water well at the location of (9S 22 E Section 2) and is 112 feet below the surface. Potential USDW's are protected from the proposed injection zone by surface casing which is run from the surface to 5750 feet. Further isolation will be provided by 2-7/8" tubing.

- **1.(e) Name and Geological Description of Injection Zone**

Trigg 1-16 will be targeting the Virgelle Formation for its water injection. It is a sandstone exhibiting good thickness and an average of ten percent porosity. Its thickness is around eighty feet. The top of the Virgelle Formation is at a depth of 5560' with the bottom being at 5640'

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- Thickness and Description of Constraining Formations**

Above the Virgelle Formation lies the Eagle Formation. It has an average thickness of 274 feet in the area. It is a fine-grained sandstone. Below lies the Telegraph Creek Formation and has an average thickness of 129 feet in the area. It is a sandy shale parted in the middle by a thin bed of concretionary sandstone.
- 1(f) Additional Information on Producing Wells in the AOR**

As mentioned above there is one other well that penetrates the injection zone, which is the Baldwin Federal 12-15 (25-009-21284).
- 1(g) Open Hole Logs**

All information pertaining to the Baldwin Federal 12-15 (producing well) and the Trigg 1-16 (Injection Well) is currently on file with the MBOGC. No additional logs will be run at this time. A Cement Bond Log will be completed after operations are complete prior to injection.
- 1(h) Description of Wellbore Construction**

Proposed wellbore configurations are attached along with a workover procedure. Currently there is 9-5/8" K-55 surface casing run to 501'. There is 5-1/2" casing run from the surface to 8829' as well. The surface casing was cemented with 460 sacks of cement and the 5-1/2" casing was cemented with 450 sacks. A bridge plug will be set at a depth of 5660'. 10 bags of cement will be plugged on top of the bridge plug. Perforations will be made at depths from 5560' and 5640' targeting the Virgelle Formation. Tubing and a packer will then be run to a depth 100' above the bottom which will be around 5650'.
- 1(i) Description of Injection Fluid**

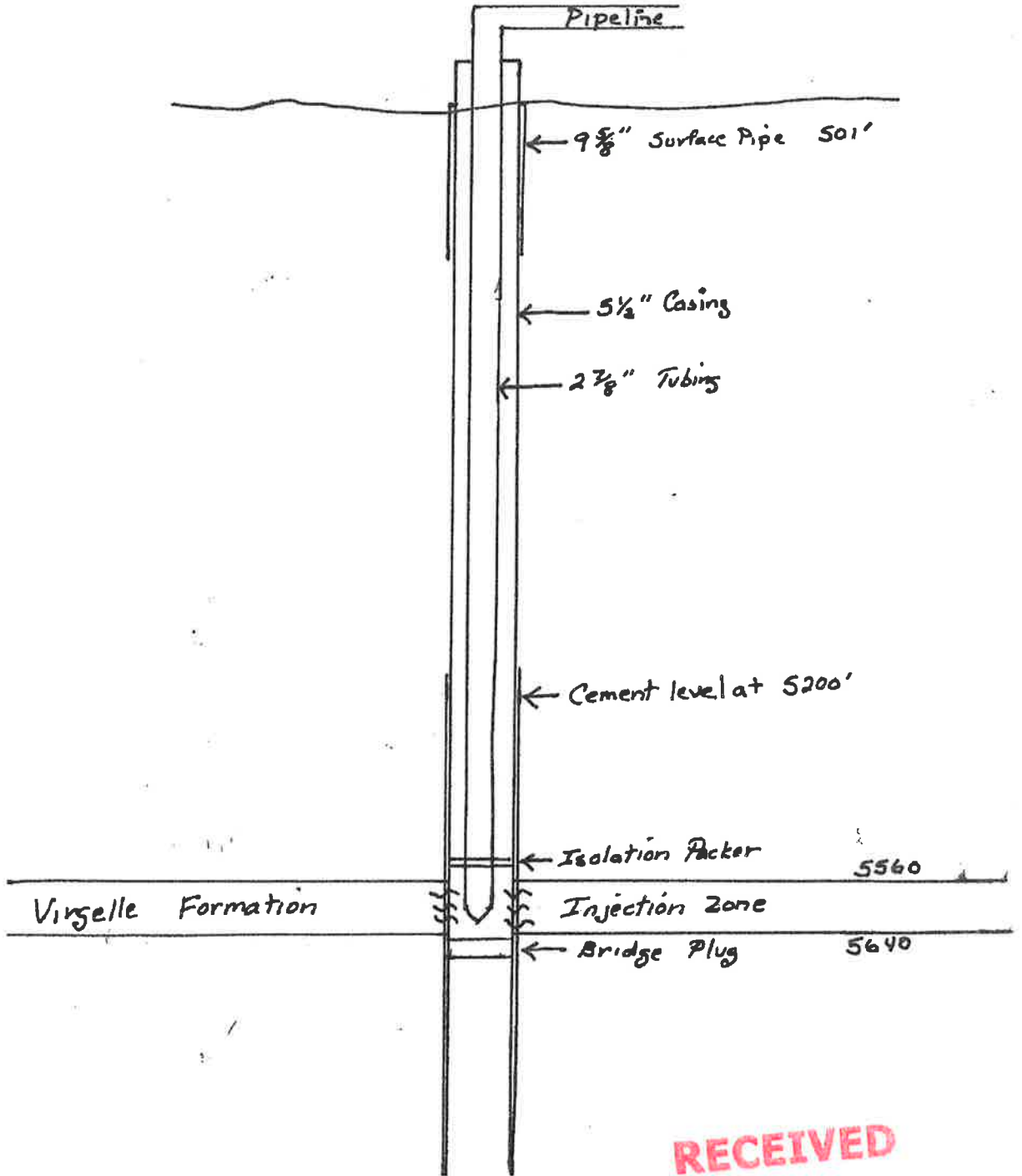
The injection fluid will be produced water from the North Clarks Forks field. The water will come directly from the Lakota Formation specifically from Baldwin Federal 12-15. The anticipated injection rate is expected to be around 100 BWPD. Another operator in the area JJ Bunkirt Oil and Gas Corporation located at section 26, T9S R22E will also provide injectable water. JJ Bunkirt produces from the Lakota Formation as well and has very similar produced water. Bunkirt's wells include API # 25-009-21283, 25-009-21285, and 25-009-21017. A detailed water analysis on produced Lakota formation water is attached. The water analyses results were obtained by Energy Laboratories for both Baldwin Federal 12015 and Bunkirt's produced water and are both attached. Using a .75 psi/ft fracture gradient and a .5 psi/ft fluid gradient and the top perforations being at 881 feet, the fracture wellhead pressure is calculated to be 2052 psi. The average injection pressure is anticipated to be approximately 900 psi.

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Proposed Injection Wellbore Design



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Static Fracture Calculations

Trigg 1-16	
Static Fracture Wellhead Pressure	
Top of Virgelle	5560'
Fracture Gradient	0.750 psi/ft
Injection Fluid Gradient	0.5 psi/ft
Static Gradient	.233 psi/ft

Static Frac Wellhead Pressure = Static Gradient x Top Perf	
Static Frac Wellhead Pressure = <u>1295.48 psi</u>	
Friction Pressure Loss: $(Ws \times .433 \times .2083 \times [(100/cs)^{1.852}] \times (Rf^{1.852}/Di^{4.8655})$	

F: Friction per 100 ft of pipe	.225 psi/ 100 ft
Cs: Surface Constant for coated pipe	150
Rf: Flow rate (gpm)	15 gpm
DI: Inside Diameter	2.04 (in)
Ws: Water Specific Gravity	1.125

Tubing Depth = T	5560'
Friction Loss	F x T/100 ft = <u>12.5 psi</u>

Dynamic Fracture Pressure = [Static Frac Pressure + Friction Loss] = <u>1307.98 psi</u>	
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BALDWIN LYNCH ENERGY CORPORATION

July 10, 2019

Procedure;

- 1) Mobilize drilling equipment, rig up drilling rig.
- 2) Install wellhead.
- 3) Pick up bridge plug.
- 4) Pick up tubing with bridge plug attached and run to a depth of 5,660'.
- 5) Set bridge plug at 5,660' Trip out of hole.
- 6) Run bond log.
- 7) Set 10 bag cement plug on top of the bridge plug.
- 8) Pick up 4 ¾ inch drill bit and clean out hole down to 5,650'.
- 9) Trip out of hole, remove bit.
- 10) Perforate casing between 5'560-5'640.
- 11) Trip back in hole with tubing and isolation packer < 100' from bottom
- 12) Set packer,
- 13) Notify State inspector and perform a annular pressure test
- 14) Hook up pipeline and begin injection
- 15) Rig down all drilling equipment including drilling rig

Richard Baldwin

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Greeley, WY 888-688-7174 • Rapid City, SD 605-472-1225 • College Station, TX 888-688-2210

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: JJ Bunkert Oil and Gas
Project: South Clarks Fork
Lab ID: B12081103-001
Client Sample ID: Shaiby Day #1

Report Date: 08/29/12
Collection Date: 08/07/12 18:00
Date Received: 08/10/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	8.7	s.u.	H	0.1		A4500-H B	08/10/12 18:12 / sam
Conductivity @ 25 C	9510	umhos/cm		5		A2510 B	08/10/12 18:12 / sam
Solids, Total Suspended TSS @ 105 C	580	mg/L	H	10		A2540 D	08/14/12 17:25 / sam
Solids, Total Dissolved TDS @ 180 C	5220	mg/L		10		A2540 C	08/13/12 11:39 / qej
INORGANICS							
Acidity, Total as CaCO3	ND	mg/L		4		A2310 B	08/13/12 15:30 / sam
Alkalinity, Total as CaCO3	1110	mg/L		4		A2320 B	08/10/12 18:36 / sam
Bicarbonate as HCO3	1210	mg/L		4		A2320 B	08/10/12 18:36 / sam
Carbonate as CO3	70	mg/L		4		A2320 B	08/10/12 18:36 / sam
Chloride	2880	mg/L	D	10		E300.0	08/14/12 01:09 / jrs
Sulfate	40	mg/L	D	20		E300.0	08/14/12 18:38 / jrs
Fluoride	4.7	mg/L		0.1		A4500-F C	08/13/12 16:02 / sam
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	08/14/12 12:20 / bla
METALS, DISSOLVED							
Calcium	3	mg/L		1		E200.7	08/13/12 13:16 / rjh
Iron	0.12	mg/L		0.03		E200.7	08/13/12 13:16 / rjh
Magnesium	ND	mg/L		1		E200.7	08/13/12 13:16 / rjh
Manganese	0.025	mg/L	D	0.005		E200.7	08/13/12 13:16 / rjh
Potassium	12	mg/L		1		E200.7	08/13/12 13:16 / rjh
Sodium	2100	mg/L	D	4		E290.7	08/13/12 13:16 / rjh
QUALITY CONTROL							
A/C Balance	-3.67	%				Calculation	08/15/12 10:12 / sin
ORGANIC CHARACTERISTICS							
Oil & Grease (HEM)	1400	mg/L		1		E1604A	08/17/12 15:10 / ell-g

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Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.
NI - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.



ENERGY LABORATORIES, INC. • P.O. Box 30016 • 1120 South 27th Street • Billings, MT 59107-0916
 Toll Free 800.735.4489 • 408.252.6325 • Fax 408.252.6069 • ehl@energylab.com • www.energylab.com

Company: Black Gold Energy Services Inc	Date: 7/23/2008
Field: 0	Sample Date: 7/9/2008
County: 0	Formation:
Location: Baldwin Fed. 12-15	Rock Type:
Lab ID: B08071285-001	Depth:
Comments:	

Water Analysis Report

CATIONS	mg/l	meq/l	ANIONS	mg/l	meq/l
Potassium	330	8.44	Sulfate	1,200	24.98
Sodium	1,690	73.51	Chloride	965	27.22
Calcium	53	2.64	Carbonate	<1	0.00
Magnesium	4	0.33	Bicarbonate	1,670	27.38
Iron	nd	nd	Bromide	nd	nd
Barium	nd	nd	Organic Acids	nd	nd
Strontium	nd	nd	Hydroxide	<1	0.00
SUM +	2,077	84.92	SUM -	3,835	79.58

Solids	
Total Dissolved Solids @180°C	ND mg/l
Total Solids, Calculated	5,077 mg/l
Total Solids, NaCl equivalents	3,896 mg/l
Chloride as NaCl	1,591 mg/l
NaCl, % of Total Dissolved Solids	31.33 %
Accuracy	-3.99 Sigma

Sample Conditions	
pH, s.u. (Field)	8.40 s.u.
Sample Pressure	14.70 psia
Surface Temp	70.00 °F
Downhole Temp	na °F
Ionic Strength	0.097 μ

Dissolved Gases	
Bisulfide Ion	nd
Hydrogen Sulfide	nd
Total Sulfide	nd

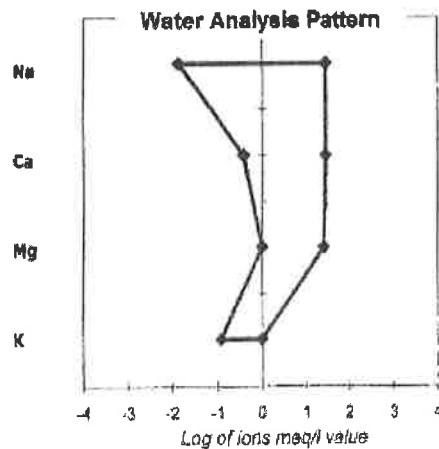
Dissolved O ₂ , aq	nd
Total CO ₂ , aq	1,217 mg/l

Other Properties	
Calcium Hardness as CaCO ₃	132 mg/l
Magnesium Hardness as CaCO ₃	17 mg/l
Total Hardness as CaCO ₃	149 mg/l

Specific Gravity	1.004 measured
Specific Gravity	1.004 calculated
Resistivity, 68°F	1.30 ohm-m
Conductivity 25°C	7,680 umhos/cm

Microbiological	
Sulfate Reducing	nd
Aerobic Bacteria	nd

Scaling Conditions	
Calcium Carbonate	CaCO ₃ +
Calcium Sulfate	CaSO ₄ - - -
Barium Sulfate	BaSO ₄ -
Strontium Sulfate	SrSO ₄ -



Cl
Probable Mineral Residue, Dry
 Calculation error = -6.7 %

COMPOUND	mg/l
NaHCO ₃	2,012
Na ₂ SO ₄	1,774
NaCl	1,436
Ca(HCO ₃) ₂	214
KCl	197.4
Mg(HCO ₃) ₂	24.1

Note: nd denotes 'Not Determined'

01/13/08 • E.L.I. 2000001 • 1000001
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Mineral Owners

State of Montana

Department of State Lands

Attn: Trevor Taylor

1625 Eleventh Avenue

Helena, MT, 59601

United States of America

Bureau of Land Management State Office

Attn: Jack Wunder

5001 Southgate Drive

Billings, MT, 59101-4669

Surface Owners

State of Montana

Department of State Lands

Attn: Trevor Taylor

1625 Eleventh Avenue

Helena, MT, 59601

United States of America

Bureau of Land Management State Office

Attn: Jack Wunder

5001 Southgate Drive

Billings, MT, 59101-4669

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Working and Overriding Royalty Interest Owners

Leo A. and Kathleen R. Giangiacomo

2033 Begonia
Casper, WY, 82604

Sinclair Oil & Gas Company

550 East South Temple
Salt Lake City, UT, 84102

Don Parsons Oil & Gas

3029 Palmer Point Ct.
Reno, NV, 89511

CG Montana, LLC

3372 Nambe Drive
Reno, NV, 89511

Hamm Family Trust

3461 Arivaca Court
Reno, NV 89511

HT Lyons FLP, Ted Lyons

2829 Chew Street
Allentown, PA, 18104

Carbon Summit, LLC

5443 Denmans Loop
Belton, TX, 76513

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Lynch Energy, LLC

838 Marsh Avenue

Reno, NV, 89509

Glenn Librecht

12320 High Vista Drive

Reno, NV, 89511

Pacific Breeze LLC

3035 Palmer Pointe Court

Reno, NV, 89511

Okoboji

3388 Forest View Lane

Reno, NV 89511

Baldwin Lynch Energy Corp

1001A East Harmony Rd #356

Fort Collins, Co, 80525

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FORM NO. 2 R 10/09

ARM 36.22.307, 601, 605,
1003, 1004, 1011, 1013,
1103, 1222, 1240, 1301,
1306, 1309, and 1417

Submit In Quadruplicate To:

MONTANA BOARD OF OIL AND GAS CONSERVATION
2535 ST. JOHNS AVENUE
BILLINGS, MONTANA 59102

SUNDRY NOTICES AND REPORT OF WELLS

Operator Baldwin Lynch Energy		Lease Name:	
Address 1001A East Harmony Rd #368		State	
City Fort Collins State CO Zip Code 80525		Type (Private/State/Federal/Tribal/Allotted):	
Telephone 775-691-3074 Fax		Well Number: 1-16	
Location of well (1/4-1/4 section and footage measurements): 1956 FNL 837 FEL SENE		Unit Agreement Name:	
API Number: 25 009 21056 State County Well		Well Type (oil, gas, injection, other): Injection Conversion	
		Field Name or Wildcat: North Clarks Fork	
		Township, Range, and Section: 9S 22E Section 16	
		County: Carbon	

Indicate below with an X the nature of this notice, report, or other data:

Notice of Intention to Change Plans	<input checked="" type="checkbox"/>	Subsequent Report of Mechanical Integrity Test	<input type="checkbox"/>
Notice of Intention to Run Mechanical Integrity Test	<input type="checkbox"/>	Subsequent Report of Stimulation or Treatment	<input type="checkbox"/>
Notice of Intention to Stimulate or to Chemically Treat	<input type="checkbox"/>	Subsequent Report of Perforation or Cementing	<input type="checkbox"/>
Notice of Intention to Perforate or to Cement	<input type="checkbox"/>	Subsequent Report of Well Abandonment	<input type="checkbox"/>
Notice of Intention to Abandon Well	<input type="checkbox"/>	Subsequent Report of Pulled or Altered Casing	<input type="checkbox"/>
Notice of Intention to Pull or Alter Casing	<input type="checkbox"/>	Subsequent Report of Drilling Waste Disposal	<input type="checkbox"/>
Notice of Intention to Change Well Status	<input checked="" type="checkbox"/>	Subsequent Report of Production Waste Disposal	<input type="checkbox"/>
Supplemental Well History	<input type="checkbox"/>	Subsequent Report of Change in Well Status	<input type="checkbox"/>
Other (specify) _____	<input type="checkbox"/>	Subsequent Report of Gas Analysis (ARM 36.22.1222)	<input type="checkbox"/>

Describe Proposed or Completed Operations:
Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.

See attached exhibits

BOARD USE ONLY	
Approved _____	Date _____
Name _____	Title _____

The undersigned hereby certifies that the information contained on this application is true and correct:

7-11-2019 *Richard Baldwin*
Date Signed (Agent)
Richard Baldwin, President
Print Name and Title
Telephone: 775-691-3074

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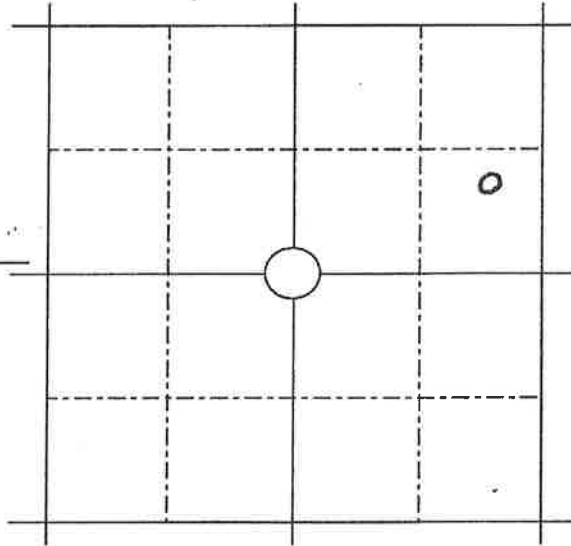
SUPPLEMENTAL INFORMATION

NOTE: Additional information or attachments may be required by Rule or by special request.

Plot the location of the well or site that is the subject of this notice or report.

Range 22E

Township 9S



BOARD USE ONLY

CONDITIONS OF APPROVAL

The operator must comply with the following condition(s) of approval:

Failure to comply with the conditions of approval may void this permit.

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