DEPARTMENT OF CONSERVATION

Managing California's Working Lands

DIVISION OF OIL, GAS, & GEOTHERMAL RESOURCES

4800 STOCKDALE HIGHWAY • SUITE 417 • BAKERSFIELD, CALIFORNIA 93309

PHONE 661 / 322-4031 • **FAX** 661 / 861-0279 • **TDD** 916 / 324-2555 • **WEB SITE** conservation.ca.gov

October 10, 2012

Mr. Joseph Butler
Macpherson Oil Company (M0950)
P.O. Box 5368
Bakersfield, CA 93388

RE: Well WD-7

Dear Mr. Butler,

This Division has received your Notice of Intention to Rework the well noted above, dated 9/13/2012 and received 9/25/2012.

This well is pending an evaluation by the US EPA for injection into a non-exempt zone. As such, the Division must hold this notice in abeyance pending the results of the US EPA evaluation.

If you have any questions, please call Dan Wermiel at (916) 445-9686.

Burton R. Ellison
Deputy Supervisor

By Burton R. Ellison

OG 113

mtg

DEPARTMENT OF CONSERVATION

No. P412-6182

DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES
4800 Stockdale Hwy., Suite 417 Bakersfield, CA 93309 - 0279

PERMIT TO CONDUCT WELL OPERATIONS

	Old	New
FIELD CODE	628	628
AREA CODE	09	09
POOL	15	15

WATER DISPOSAL PROJECT
Vedder/Walker Zones
BLM

Mr. Joseph Butler
Macpherson Oil Company (M0950)
P.O. Box 5368
Bakersfield, CA 93388

Bakersfield, California
October 09, 2012

Your proposal to **Rework** well **WD-7**, A.P.I. No. **030-33731**, Section **18**, T. **28S**, R. **29E**, **MD** B. & M., **Round Mountain** field, **Main** area, **Vedder-Walker** pool, **Kern** County, dated **9/13/2012**, received **9/25/2012** has been examined in conjunction with records filed in this office.

THE PROPOSAL IS APPROVED PROVIDED:

1. Hole fluid of a quality and in sufficient quantity to control all subsurface conditions in order to prevent blowouts shall be used.
2. Blowout prevention equipment, as defined by this Division's publication No. M07, shall be installed and maintained in operating condition and meet the following minimum requirements:
   a. Class **II 2M** on the **9 5/8" and 7"** casing.
3. Cement bond logs in program steps 12 and 28 shall be submitted to the division for evaluation prior to proceeding.
4. The **7**" casing is cemented with sufficient cement to fill behind the casing from 2520' to the surface.
5. **THIS DIVISION SHALL BE NOTIFIED TO:**
   a. Witness a pressure test of the **7"** casing prior to drilling out the shoe.
6. This well shall conform to the provisions set forth in our letter dated **01/02/2012**, approving the project.
7. No program changes are made without prior Division approval.

Blanket Bond Dated: 1/6/1989

Tim Kustic
State Oil & Gas Supervisor

Engineer Matt Stikes
Direct (661) 322-4031
Office (661) 322-4031

By_____
Burton R. Ellison, District Deputy

MWS/ag

A copy of this permit and the proposal must be posted at the well site prior to commencing operations.

Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.

UIC Project No. 62809014

OG111

RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

No. P 6182

622 (field code)

09 (area code)

15 (new pool code)

15 (old pool code)

PERMIT TO CONDUCT WELL OPERATIONS

WATER DISPOSAL PROJECT
Vedder/Walker Zones
BLM

MacPherson

Bakersfield, California

Your - proposal to Rework well WD-7
A.P.I. No. 030-33731 Sec. 18 T. 28S R. 29E MD B.&M.
Round Mountain field Main area Vedder-Walker pool
Kern County dated 9/13/12 received 9/25/12 has been examined in conjunction with records filed in this office.

2. 1) 13

2) 10 b. IIZM 9 5/8" and 7"

~~3) 31~~

4) ~~Proposed~~ Cement-bond-logs in program steps 12 and 28 shall be submitted to the division for evaluation prior to proceeding.

5) 16 7" ~~the shoe~~ 2520' to the surface.

6) 74

a) 86 7" casing prior to ~~commencing injection~~ drilling out the shoe.

7) 22 1/2/2012

8) 67

Engineer M. Stikes #62609014

WILLIAM F. GUERARD, JR., State Oil and Gas Supervisor

Phone

By _____ Deputy Supervisor

A copy of this permit and the proposal must be posted at the well site prior to commencing operations.

Records for work done under this permit are due within 60 days after the work has been completed or the operations have been suspended.

OG111 (5/04/UCP/5M) Printed on recycled paper.

NATURAL RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES

FOR DIVISION USE ONLY			
	Forms		
Bond	OGD114	OGD121	
BKS			

NOTICE OF INTENTION TO REWORK / REDRILL WELL

Detailed instructions can be found at: www.conservation.ca.gov/dog/

In compliance with Section 3203, Division 3, Public Resources Code, notice is hereby given that it is our intention to rework ☐ / redrill ☒ well Sec. 18 WD-7, API No. 030-33731,
(Check one)

Sec. 18, T. 28S, R. 29E, MD B.&M., Round Mountain Field, Kern County.

The complete casing record of the well (present hole), including plugs and perforations, is as follows: (Attach wellbore schematics diagram also.)

See attached wellbore diagram

9/25/12 SH
9/27/12 MWS
10/2/12 ATJ

The total depth is: 3477' feet. The effective depth is: 3450' feet.

Present completion zone(s): Walker (Name). Anticipated completion zone(s): Walker (Name).

Present zone pressure: 350 psi. Anticipated/existing new zone pressure: 350 psi.

Is this a critical well as defined in the California Code of Regulations, Title 14, Section 1720(a) (see next page)? Yes☐ No☒

For redrilling or deepening only, is a California Environmental Quality Act (CEQA) document required by a local agency? Yes☐ No☒ If yes, see next page.

The proposed work is as follows: (A complete program is preferred and may be attached.)

See attached proposed program to run inner 7" casing.

If well is to be redrilled or deepened, show proposed coordinates (from surface location) and true vertical depth at total depth: _____ feet _____ (Direction) and _____ feet _____ (Direction) Estimated true vertical depth: _____

Will the Field and/or Area change? Yes☐ No☒ If yes, specify New Field: _____ New Area: _____

The Division must be notified immediately of changes to the proposed operations. Failure to provide a true and accurate representation of the well and proposed operations may cause rescission of the permit.

Name of Operator Macpherson Oil Company			
Address P.O. Box 5368		City/State Bakersfield. Ca.	Zip Code 93388
Name of Person Filing Notice Mike Cook	Telephone Number: 661 393 3204 EXT 110	Signature M. C	Date 9/13/2012
Individual to contact for technical questions: Mike Cook	Telephone Number: 661 393 3204 EXT 105	E-Mail Address: michael_cook@macphersonoil.com	

This notice and an indemnity or cash bond must be filed, and approval given, before the workover begins. (See the reverse side for bonding information.) If operations have not commenced within one year of the Division's receipt of the notice, this notice will be considered cancelled.

RECEIVED
SEP 25 2012
DIVISION OF OIL & GAS
BAKERSFIELD

OG107 (1/09)

Macpherson Oil Company

Post Office Box 5368
Bakersfield, CA 93388
Phone: (661) 393-3204
Fax: (661) 393-8065

Well Remedial/Workover Program

9-13-2012

Well: USL 18 #WD-7 (API # 030-33731)

Reason for Workover: Repair Casing & Run 7" Inner casing string.

Planned Work: Sand back the Walker Sand, Squeeze existing 9-5/8" Casing, Run Inner 7" Casing & cement in place, Clean out sand to 3450'.

Well Conditions/Casing: (Completed 9/02/2007)

Elevation GL: 1464' DF: 1477'

9-5/8", 36# Casing cemented @ 2573' with 1263 ft3 Cmt. TTOC @ surface'

7", 23# Casing Hung @ 3,450', Top @ 2520'.
Perforated: 2554'-3450' w/ 60Mx24Rx2"Sx6"C

Total Depth: 3477' **Effective Depth:** 3450'. Bottom of Liner.

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Project/Workover Procedure:

1. MIRU workover rig. Kill well. Install BOPE.

2. MU bailer and clean out to 3450'.

3. Run in hole with open ended tubing to 2520' & sand back liner to 2520'. POOH.

4. Make up cement dump bailer and dump 1 ft3 cement @ 2520'.

5. RIH with 9-5/8" bridge plug and set @ 1020'. Cap bridge plug with sand.

6. Swab well and record fluid levels as directed.

7. RDMO.

8. R/U Coiled Tubing Unit. R/U cement equipment and pump 40 Cuft of Class G with 35% SF at 1014'. Pull above cement and clear cement from tubing. Down squeeze 10 CuFt Cmt. WOC. Repeat process until a hard tag of 500' from surface is reached.

9. RDMO Coiled Tubing Unit and cement equipment.

10. MIRU workover rig.

11. Make up 8-3/4" bit on 3-1/2" tubing. RIH and drill out to 1014'. POOH.

12. MIRU wireline equipment and run cement bond log from 1014' to surface. If CBL is good proceed to next step, if not perform squeeze job as directed.

13. Make up BP retrieving tool. RIH and circulate clean to top of bridge plug. Engage and release BP. POOH and lay down BP.

14. Rig up and run 9-5/8" casing scraper to 2515', POOH.

15. MIRU wireline equipment. RIH and perforate 2440' - 2445' and 2480' - 2485' w/ 4 – ½" JHPF.

16. MIRU cement equipment.

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BAKERSFIELD

17. Run in hole with open end tubing to 2510' and lay in balance plug from 2420' to 2515' with 45 Cuft of Class G with 35% SF. POOH & WOC.

18. Run In hole w/ 8-3/4" bit and drill out cement to 2420', circulate clean and POOH.

19. MIRU wireline equipment. RIH and perforate 2370' - 2375' and 2400' - 2405' w/ 4 – ½" JHPF.

20. Run in hole with open end tubing to 2415' and lay in balance plug from 2350' to 2420' with 33 Cuft of Class G with 35% SF. POOH & WOC.

21. Run In hole w/ 8-3/4" bit and drill out cement to 2350', circulate clean and POOH.

22. MIRU wireline equipment. RIH and perforate 2306' - 2311' and 2340' - 2345' w/ 4 – ½" JHPF.

23. Run in hole with open end tubing to 2345' and lay in balance plug from 2300' to 2350' with 24 Cuft of Class G with 35% SF. POOH & WOC.

24. Run In hole w/ 8-3/4" bit and drill out cement to 2260', circulate clean and POOH.

25. MIRU wireline equipment. RIH and perforate 2190' - 2195' and 2230' - 2235' w/ 4 – ½" JHPF.

26. Run in hole with open end tubing to 2255' and lay in balance plug from 2170' to 2260' with 43 Cuft of Class G with 35% SF. POOH & WOC.

27. RIH w/ 8-3/4" bit and drill out cement to 2520', circulate clean and POOH.

28. MIRU wireline equipment and run cement bond log from 2515' to 2100. If CBL is good proceed to next step, if not perform squeeze job as directed.

29. RIH and perforate 1110' - 1112', 1188' - 1190', 1330' - 1332', 1434' - 1436', 1552' - 1554', 1628' - 1630', 1796' - 1798', 1898' - 1900' and 2040' - 2042' w/ 4 – ½" JHPF.

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30. Run 7", 23# Inner casing and cement in-place @ 2520' with cement to surface. POOH. CLOSE WELL IN FOR NIGHT.

31. Cut off old head and well on New 6" 600 series head on 7" casing and install BOPE.

32. Make up 6-1/8" bit on 4 3/4" drill collars and 3-1/2" tubing, run in hole and drill out to 3450', circulate clean and POOH.

33. RIH w/ bailer and bail clean to 3450'. POOH.

34. Remove BOPE. Install well head.

35. RDMO .

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SEP 25 2012
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Macpherson Oil Company

WBD As of : 09/02/07

Field: Round Mountain

Well No: USL 18 #WD-7

Sec. 18, T28S, R29E, MD B&M

1671' N & 2968' W from SE corner of

Drawing Date: 9/6/07

Commenced Drilling: 8/26/07

Completed Drilling: 9/2/07

On Production:

Lease Ser. #: CAS 19848

Unit or CA #: CACA 34219X

Water Disposal Well

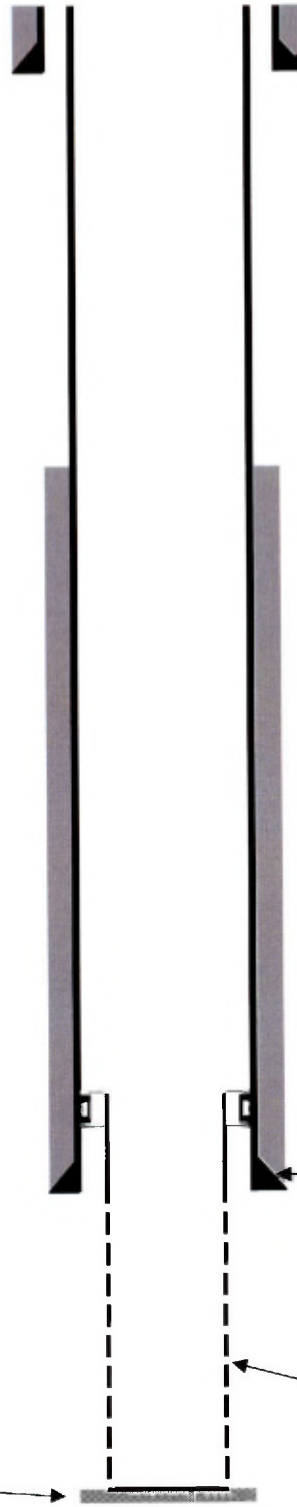
All measurements from DF

GL: 1464' **DF:** 1477'

API No.: 030-33731

Bit Record

12-1/4"	93' - 2577'	
8-3/4"	2577' - 3477'	



16" Conductor Pipe @ 93'

Prod. Equip. as of 5/4/09

Reason for pull SAPT.

	Length	Depth
No tbg. or rods in hole.		0.00
		0.00
		0.00
		0.00

9-5/8", 36# casing @ 2573'
Cemented with 1263 CuFt Cmt.
TTOC @ surface

Walker Top @ 2579'

7", 23# Liner Hung @ 3450', Top @ 2520'
Pertforated 2554'-3450' w/ 60Mx24Rx2"Sx6"C

Formation fill 3450'-3477'

TD @ 3477'

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BAKERSFIELD

ZALCO LABORATORIES, INC.
Analytical & Consulting Services

4309 Armour Avenue
Bakersfield, California 93308

(661) 395-0539
FAX (661) 395-3069

October 5, 2012

Robert Doane
Macpherson Oil Company
PO Box 5368
Bakersfield, CA 93388

TEL: (661) 393-3204
FAX: (661) 393-8065

Project ID:
RE: 1209273

Dear Robert Doane:

Zalco Laboratories, Inc. received 1 samples on 9/21/2012 for the analyses presented in the following report.

We appreciate your business and look forward to serving you in the future. Please feel free to call our office if you have any questions regarding these test results.

Sincerely,

Jessica Roberts
Project Manager
CC:

NSS: Non Sufficient Sample H: Exceeds Analysis Hold Time TTLC: Total Threshold Limit Concentration STLC: Soluble Threshold Limit Concentration TCLP: Toxicity Characteristic Leaching Procedure MCL: Maximum Contaminant Level *: See Case Narrative
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Note: Samples analyzed for regulatory purposes should be put on ice immediately after sampling and received by the laboratory at temperatures between 0-6°C. Microbiological analysis requires samples to be at least 4-10°C when received at the laboratory. For additional information regarding the limitations of the method(s) referred to, please call us at 661-395-0539.

ZALCO LABORATORIES, INC.
Analytical & Consulting Services

4309 Armour Avenue
Bakersfield, California 93308

(661) 395-0539
FAX (661) 395-3069

Macpherson Oil Company	Project: Master	Work Order No.: **1209273**
PO Box 5368	Project #:	Reported: 10/05/2012
Bakersfield, CA 93388	Attention: Robert Doane	Received: 09/21/2012 16:43

Lab Sample ID: **1209273-01**	Collected By:
Client Sample ID: 18-WD7	Date Collected: 9/20/2012 12:00:00AM

Analyte	Results	PQL	Units	Flag	Method	Date Prepared	Date Analyzed	Init.
General Chemistry								
		MCL Limits						
Total Dissolved Solids	2900	10	mg/L		SM 2540C	9/24/12	9/24/12	LME
Oil & Grease Testing								
TRPH	9.6	6.0	mg/L		EPA 1664	10/3/12	10/3/12	BIG

NSS: Non Sufficient Sample H: Exceeds Analysis Hold Time TTLC: Total Threshold Limit Concentration STLC: Soluble Threshold Limit Concentration TCLP: Toxicity Characteristic Leaching Procedure MCL: Maximum Contaminant Level *: See Case Narrative

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ZALCO LABORATORIES, INC.

4309 Armour Avenue, Bakersfield, CA 93308 (661) 395-0539 FAX (661) 395-3069 www.zalcolabs.com
2186 Eastman Avenue, Suite103, Ventura, CA 93003 (805) 477-0114 Fax (805) 477-0125

CHAIN OF CUSTODY, ID# 1209273

Page 1 of 1
Zalco Lab # 1209273
Client PO #
PROJECT ID:
QUOTE ID:

REPORT INFO	INVOICE INFO
Client: Macpherson Oil Company	Invoice To: Same as Client
Address: Po Box 53698	Address:
City, State, Zip: Bakersfield Ca 93388	City, State, Zip:
Attention: Robert Doane	Attention:
Phone: Results 661-679-4852	Phone:
Fax: Results ☐	Fax:
Email: Results Robert.Doane@Macphersonoil.com	Email:

SAMPLED BY: **EMPLOYED BY:**

Sample No.*	Sample Description	Date	Sample Time	Type*	# of Containers	ANALYSIS: TPH-D	ANALYSIS: TPH-G	Temperature (C°)	
1	18-W7	9/20/12		AQ	1	X	X	25.6	25.6 OK - to run TPH from container provided - FJ Per Robert Doane - *Sample is temperature - FJ

Indicate if Subject Primary: ☐ ☐
Short Hold Times ☐ ☐

COMMENTS:
Turnaround Time:
Routine _____ working days ☐
Rush By _____ working days
Send Copy to State of CA? Yes ☐ No ☒
Attention To: _____
Send Copy to County? Yes ☐ No ☒
County _____

RELINQUISHED By: Signature	PRINT	COMPANY	Date	Time	RECEIVED By: Signature	PRINT
[signature]	Robert Doane	MOC	9/21/12	4:13	[signature]	F Jones

NOTE: Samples are discarded 30 days after results unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client's expense.

*Sample Type Key: AQ-Aqueous; BS-Biosolid; DW-Drinking Water; GW-Ground Water; G-Gas; LPG-Liquid Petroleum Gas; OL-Oil; O-Other; P-Petroleum; S-Soil/Solid; ST-Storm Water; WW-Wastewater
*Sample No.: FOR OFFICE USE ONLY

MACPHERSON
OIL COMPANY

P.O. BOX 5368
BAKERSFIELD, CALIFORNIA 93388
TEL: 661 393-3204 FAX: 661 393-8065

2716 OCEAN PARK BOULEVARD.
SUITE 3080
SANTA MONICA, CALIFORNIA 90405
TEL: 310 452-3880 FAX: 310 452-0058

September 20, 2012

2012 SEP 27 PM 12:05

Department of Conservation
Division of Oil, Gas and Geothermal Resources
District 4
4800 Stockdale Hwy., Suite 417
Bakersfield, Calif. 93309-4031

Re: Water Disposal Project
Round Mountain Field-Main Area
Vedder-Walker Zones
Project Code: 62809014
USL 18-WD7
API: 03033731

Gentlemen:

On September 13 2012, a RA tracer survey was conducted on the USL 18-WD7 (03033731) water disposal well, operated by Macpherson Oil Company, here in the main area of the Round Mountain field. The RA tracer survey indicated that an estimated 16,190 BPD was injecting thru casing holes at depths of 580'-590', 625'645', 770'-787' and 810'- 815'. These depths were clearly out of the injection zone approved for the Water Disposal Project #62809014. As a result of this survey, injection was ceased immediately.

The approved injection zones, for this project, are the Vedder and Walker reservoirs. In the USL 18-WD7 well, the top of Walker is 2579' with the top of Vedder at 2269'. The Olcese sand ranges in the top 1270'of the well, with the top 565' a source of fresh water. A 9-5/8" casing string was cemented to 2573' with a slotted liner landed below from 2520'-3450'. The casing was cemented with 50% access of the theoretical volume in an attempt to establish cement returns to surface. However, there were no returns to surface, despite pumping a lost circulation material pill. No bond log was run in an effort to verify top of cement nor any remedial (top job) work performed.

Injection down casing, without tubing and packer, was approved for this project as a result of a variance letter received from the Division of Oil and Gas on June 10th of 1998. The variance is received based on a double casing protection string protecting the top of the Olcese formation. However, the USL 18-WD7 well did not meet the dual string requirement. Therefore, a tubing and packer should have been installed.

As a result of poor cement protection on the 9-5/8" casing string, the pipe was possibly exposed to the Brackish water portion (565'-895') of the Olcese sand. With the casing beginning to corrode, and with no second protective string, the injection fluid began to migrate into the Olcese sand.

An RA tracer survey performed back on March 5th, 2011 indicated that 100% of the injection fluid was contained to the permitted Vedder/ Walker zone. A review of the more recent injection rates and pressures indicate that this migration could have started in April of 2012. This assumption is based on the surface pressure dropping from an average of +/- 50 psi to zero.

In an attempt to help determine if the possible Brakish water portion of the Olcese sand had been degraded, MOC made a vigorous attempt to extract a true fluid sample from the sand. The liner, across

the injection zone, was sanded back and a cement bond log was performed on September 17th. With the fluid level extremely low in the wellbore, approximately 180-200 barrels of produced water needed to be placed in the wellbore in order to log the entire portion of the 9-5/8"casing. It was found that there is no cement in the annulus of the 9 5/8" casing, most likely due to the lost circulation problem.

On September 18th, a 9-5/8" bridge plug was then placed at a depth of 1020' and 12' of sand was placed on top. Swabbing of the wellbore then began. Upon entry into the wellbore a fluid level was established with the 9-5/8"cups at 600'. A total of eight barrels of fluid was swabbed from the wellbore that day.

On September 19th, 28 barrels of fluid was swabbed from the wellbore with four timed sonic fluid levels shot throughout the day. These fluid levels were taken to establish if there were fluids flowing in from the Olcese sand. The fluid levels were, 849' at 7:00am, 927' at 8:30am and 983' at 9:30am. The final fluid level was shot at 3:00pm at a depth of 992' with no indications of reservoir inflow.

On September 20th, at approximately 7:00AM a sonic fluid level was shot once again at a depth of 989'. This three foot (9.74 gallons) gain in fluid was perceived to be draining of the casing walls in the wellbore. The Division of Oil and Gas was on location to witness the fluid level. At this time, a fluid sample was taken from the wellbore for a geochemical analysis in an effort to determine the total petroleum hydrocarbons (TPH) and the total dissolved solids (TDS). A duplicate sample was obtained for the Division of Oil and Gas. A second fluid level was shot later in the day at 1:45PM and the fluid level remained at 989'. These numbers indicate that the Olcese sand may be de-saturated at the depth of the casing holes.

A notice to rework the USL 18-WD7 well has been submitted to the Division of Oil and Gas. The proposal of this workover consists of remediating the cement on the 9-5/8"casing one hundred plus feet above the permitted Vedder/ Walker zone in addition to the Brackish water portion (565'-895') of the Olcese sand to surface. Also included in this workover will be the installation of a 7" 23# inner casing string from surface to 2520' (Top of Liner). This workover will then allow MOC to be in compliance with the previously approved variance.

Macpherson Oil Company accepts full responsibility for this noncompliance issue and intends to take all necessary steps to resolve this issue.

Sincerely,

Michael Cook
Production Engineer
Macpherson Oil Company
Office: 661-393-3204 Ext 110
Cell: 661-345-8461

2012 SEP 27 PM 12:05

DEPARTMENT OF CONSERVATION

Managing California's Working Lands

DIVISION OF OIL, GAS, & GEOTHERMAL RESOURCES

4800 STOCKDALE HIGHWAY • SUITE 417 • BAKERSFIELD, CALIFORNIA 93309

PHONE 661 / 322-4031 • **FAX** 661 / 861-0279 • **TDD** 916 / 324-2555 • **WEB SITE** conservation.ca.gov

September 19, 2012

George Robin
Engineer, UIC Program
US EPA Region 9
Ground Water Office, WTR-9
75 Hawthorne St.
San Francisco, CA 94105

WATER DISPOSAL PROJECT
Round Mountain Field
Vedder/Walker Zone
Macpherson Oil Co.
WD-7, API # 03033731
Sec. 18, T.28S, R.29E

Project Code: **62809014**

NOTICE OF SIGNIFICANT NONCOMPLIANCE

Dear Mr. Robin:

A RA Tracer survey was conducted and witnessed by the Division of Oil, Gas and Geothermal Resources (Division) on the water disposal well WD-7 operated by Macpherson Oil Company, API # 03033731, located in Sec. 18, T.28S, R.29E, in the Main area of Round Mountain oil field on September 13, 2012.

The approved injection zone is the Vedder/Walker. The top of Walker is 2579', top of Vedder is 2270', top of Pyramid Hill is 2130', top of Freeman-Jewett is 1403', and Olcese is 1403' to surface. The casing is 16" cemented to 93', 9 5/8" cemented to 2573', and a 7" liner landed 2520' to 3450', perforated 2554' to 3450', Total Depth 3477'. During the drilling of the well, there were no returns from 2182' to 2577' despite pumping a lost circulation material pill. The 9 5/8" casing was cemented with 1,263 cubic feet class G cement with no returns to the surface. The well was then drilled to 3477' with continued lost circulation problems and the liner was hung. A cement bond log was not ran and a top cement job or other remediation cementing was not performed on the 9 5/8" casing. Injection down casing was approved by the Division without a tubing and packer.

A RA Tracer survey on March 5, 2011 indicated no problems and a SAPT ran on April 29, 2009 indicated the casing had integrity. However, the RA Tracer survey conducted on September 13, 2012 indicated casing holes at 580'-590', 625'-645', 770'-787' and 810'-815'. The survey also indicated that out of the estimated 19,600 BPD going into the well, only 3,410 BPD went below 2554' (top slot of the 7" liner). A rate of 16,190 BPD was being lost at shallow depths into the Olcese at 580'-815'.

Freshwater in the Main area of the Round Mountain oil field exists from the top of the aquifer near surface through the producing zones. The Vedder T.D.S. is 1,800 ppm and the Jewett T.D.S. is 2,700 ppm. The Olcese T.D.S. is 2,693 ppm in the Sharktooth area of Round Mountain. The Olcese is included in the injection zone for a water disposal project in Sections 17 and 19, T.28S, R.29E portion of the Main area and is the injection zone for a water disposal project in the Sharktooth area. The Olcese T.D.S. in the Main area is not known but is certainly below 3,000 ppm. Documentation that the non-hydrocarbon bearing Olcese was given exempt status is

provided in the attached Division documents. Unfortunately, documentation from EPA granting that exemption is not available.

Given the above uncertainty of the exempt status of the Olcese, and that the Olcese is not approved as an injection zone in the Vedder/Walker water disposal project for Macpherson Oil Co., the lost of injection fluid through casing holes into the Olcese is considered by the Division to be a Significant NonCompliance occurrence. The following actions have been taken relevant to migration outside casing invading a USDW:

1) Injection was ceased immediately upon finding the casing holes during the RA Tracer survey on September 13, 2012.
2) The operator is conducting an investigation to determine if a USDW has been degraded. The liner of the well will be sanded back and fluid samples will be obtained from the Olcese. A geochemical analysis and total petroleum hydrocarbons (T.PH.) will be conducted on the Olcese sample.
3) When the T.D.S. and T.P.H. of the sample fluid from the Olcese are known, a determination will be made by the Division whether the Olcese zone fluids have been degraded and what further action may be needed.
4) A cement bond log was run on September 17, 2012 to determine the top of cement in the 9 5/8" annulus. It was found that there is no cement in the annulus of the 9 5/8" casing, most likely due to the lost circulation problem.
5) The Olcese may be de-saturated at the depth of the casing holes. The sampling operation may provide evidence of whether injected fluid can be recovered.
6) According to the operator, the injection pressure dropped from 50 psi to 0 psi in April, 2012. This may have been the time that the holes developed.
7) A notice of intention to rework has been submitted to the Division to cement a 7" inner casing from surface to 2520'. The 9 5/8" casing annular cement remediation will be a condition of the permit.
8) A casing integrity test will be conducted while the rig is still on site. A RA Tracer survey will be due within 90 days of injection. With two protective casing strings, a tubing/packer will not be required for the well.

If you have any questions, please call Mark Gamache at (661) 334-3656.

Sincerely,

Burton R. Ellison

Burton R. Ellison
Deputy Supervisor

cc: RWQCB, UIC file, Jerry Salera, Dan Wermiel