



State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax: (303)894-2109



**EARTHEN PIT REPORT/PERMIT**

This form is to be used for both reporting and permitting pits. Rule 903 describes when a Permit with prior approval, or a Report within 30 days, is required for pits. Submit required attachments and forms.

Complete the  
Attachment Checklist

**FORM SUBMITTED FOR:**

☒ Pit Report

☒ Pit Permit

Oper OGCC

|                              |   |  |
|------------------------------|---|--|
| Detailed Site Plan           | ✓ |  |
| Topo Map w/ Pit Location     | ✓ |  |
| Water Analysis (Form 25)     | ✓ |  |
| Source Wells (Form 26)       | ✓ |  |
| Pit Design/Plan & Cross Sect | ✓ |  |
| Design Calculations          | ✓ |  |
| Sensitive Area Determ.       | ✓ |  |
| Mud Program                  | ✓ |  |
| Form 2A                      | ✓ |  |

OGCC Operator Number: 10091  
Name of Operator: Berry Petroleum Company  
Address: 1999 Broadway, Suite 3700  
City: Denver State: CO Zip: 80202

Contact Name and Telephone:  
Bryan Burns  
No: 303-999-4245  
Fax: 303-999-4345

API Number (of associated well): 05-045-14045 OGCC Facility ID (of other associated facility): 335841 Chevron J-20 Pad

Pit Location (QtrQtr, Sec, Twp, Rng, Meridian): NWSE, Sec. 20, T5S, R96W 6th PM

Latitude: 39.598447 Longitude: -108.188609 County: Garfield

Pit Use: ☒ Production ☐ Drilling (Attach mud program) ☒ Special Purpose (Describe Use): Completions / Water Storage

Pit Type: ☒ Lined ☐ Unlined Surface Discharge Permit: ☐ Yes ☐ No

Offsite disposal of pit contents: ☐ Injection ☐ Commercial Pit/Facility Name: CHEVRON Pit/Facility No: J-20

Attach Form 26 to identify Source Wells and Form 25 to provide Produced Water Analysis results.

**Existing Site Conditions**

Is the location in a "Sensitive Area?" ☒ Yes ☐ No Attach data used for determination.

Distance (in feet) to nearest surface water: 697' ground water: 300' water wells: 18,908'

**LAND USE (or attach copy of Form 2A if previously submitted for associated well) Select one which best describes land use:**

Crop Land: ☐ Irrigated ☐ Dry Land ☐ Improved Pasture ☐ Hay Meadow ☐ CRP

Non-Crop Land: ☒ Rangeland ☐ Timber ☐ Recreational ☐ Other (describe):

Subdivided: ☐ Industrial ☐ Commercial ☐ Residential

**SOILS (or attach copy of Form 2A if previously submitted for associated well)**

Soil map units from USNRCS survey: Sheet No: CO682 Soil Complex/Series No: 56

Soils Series Name: Parachute-Inglu-Rhone association/ 25-50% Slopes Horizon thickness (in inches): A: N/A ; B: N/A ; C: N/A

Soils Series Name: Horizon thickness (in inches): A: ; B: ; C:

Attach detailed site plan and topo map with pit location.

**Pit Design and Construction**

Size of pit (feet): Length: 250' Width: 60' Depth: 8'

Calculated pit volume (bbls): 7,300 Daily inflow rate (bbls/day): approx. 52

Daily disposal rates (attach calculations): Evaporation: bbls/day Percolation: bbls/day

Type of liner material: Polyethylene Plastic Thickness: 2 liners - 24 mil. and 60 mil.

Attach description of proposed design and construction (include sketches and calculations).

Method of treatment of produced water prior to discharge into pit (separator, heater treater, other): Separators

Is pit fenced? ☒ Yes ☐ No Is pit netted? ☒ Yes ☐ No

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Bryan Burns

Signed:

Title: Environmental Specialist

Date: 5/23/2011

OGCC Approved: *Dave Zilko*

Title: Location Assessment Specialist Date: 7-28-11

CONDITIONS OF APPROVAL, IF ANY:

*See Attached*

FACILITY NUMBER: 423848

**Berry Petroleum, Chevron J-20 596 Pad, NWSE Sec 20 T5S R96W, Garfield County, Form 15 Pit Permit (Pit ID#423848) Conditions of Approval**

**COA 21** - Operator must comply with all provisions of the June 12, 2008 Notice to Operators (NTO) Drilling Wells Within  $\frac{3}{4}$  Mile of the Rim of the Roan Plateau in Garfield County – Pit Design, Construction, and Monitoring Requirements.

**COA 22** - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) shall be tested by filling the pit with at least 4 feet of water, measured from the base of the pit (not to exceed the 2-foot freeboard requirement). The operator shall monitor the pit for leaks for a period of 72 hours prior to draining the pit and commencing operations. Operator shall notify the COGCC Oil and Gas Location Assessment (OGLA) Specialist for Western Colorado (Dave Kubeczko; email [dave.kubeczko@state.co.us](mailto:dave.kubeczko@state.co.us)) 48 hours prior to start of the hydrotest. Hydrotest monitoring results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit.

**COA 23** - Operator must ensure 110 percent secondary containment for any volume of fluids contained at the water handling facility site during natural gas development activities and operations; including, but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e., best management practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. Any berm constructed at the well pad location will be stabilized, inspected at regular intervals (at least every 14 days), and maintained in good condition.

**COA 5** - Operator must implement best management practices to contain any unintentional release of fluids, including any fluids conveyed via buried or temporary surface pipelines.

**COA 90** - Notify COGCC Oil and Gas Location Assessment (OGLA) Specialist for Western Colorado (Dave Kubeczko; email [dave.kubeczko@state.co.us](mailto:dave.kubeczko@state.co.us)) and the COGCC Field Inspection Supervisor for Northwest Colorado (Shaun Kellerby; email [shaun.kellerby@state.co.us](mailto:shaun.kellerby@state.co.us)) 48 hours prior to use of existing pit.

**COA 47** - The pit will require a leak detection system (Rule 904.e).

**COA 41** - The nearby hillside must be monitored for any day-lighting of fluids throughout pit operations.

**COA 49** - The operator must maintain the fencing and netting until the pit is closed in accordance with Rule 905. Closure of Pits, and Buried or Partially Buried Produced Water Vessels.

**COA 25** - The area where flowback fluids will be stored/reused must be constructed to be sufficiently impervious to contain any spilled or released material.

**COA 20** - Surface water samples from Bear Run Creek (at the two previously sampled [April 2010] locations) shall be collected prior to pit use and every 12 months to evaluate potential impacts from pit operations. At a minimum, the surface water samples will be analyzed for the following parameters: major cations/anions (chloride, fluoride, sulfate, sodium); total dissolved solids (TDS); and BTEX/DRO.

**COA 91** - At the time of pit closure, operator must submit disposal information via a Form 4 Sundry Notice to the COGCC Location Specialist for Western Colorado (Dave Kubeczko; email [dave.kubeczko@state.co.us](mailto:dave.kubeczko@state.co.us)). The disposal method will need to be approved prior to operator starting pit closure. In addition, operator will collect a pit water sample and, at a minimum, analyze for the following parameters: pH; alkalinity; specific conductance; major cations/anions (chloride, fluoride, sulfate, sodium); total dissolved solids (TDS); BTEX/DRO; TPH; PAH's (including benzo[a]pyrene); and metals (arsenic, barium, calcium, chromium, iron, magnesium, selenium). At the time of closure/disposal of pit water, COGCC may require additional analytes, as appropriate.

**Supplemental Information**  
**Form 15 - Chevron J-20 Production Pit**  
**COGCC Facility Id. *Pending***

**1. Historic and Intended Use of Chevron J-20 Pit**

Construction of the original Chevron J-20 drilling pit was completed in 2007. Since that time, two wells were drilled at that location (one producing, one plugged and abandoned). In February 2010, the original pit was emptied and reconstructed per COGCC Rule 904 with a double synthetic liner (24-mil and 60-mil) and other required features. The pit was hydrotested prior to placement in service. Well completions and flowback occurred in the winter and spring of 2010.

The following is a chronology for the pit, including construction activity and pit uses:

- July - August, 2006 - Survey & plat well pad.
- Access Road and pad were originally built in 2007. The pits were built and lined, but never used. Prior to drilling in 2010, the two existing pits were combined into one and lined:
- February 2 - 5, 2010 - Backfilled existing pit, excavated new pit, prep for liner w/ 12" material.
- February 8-12, 2010 - Prepped pit, installed felt, 24 mil liner, & 60 mil liner.
- Feb. 11-12, 2010 - Hauled water to location for liner hydrotest procedure.
- Feb.13, 2010 - Liner hydrotested under Berry personnel supervision.
- Feb 16, 2010 - Rig moved onto location.
- April 16, 2010 - Hauled drill mud & water out of pit.
- April 13 - 28, 2010 - Hauled sawdust to pad.
- April 15- 29, 2010 - Mixed spoil & sawdust with drill cuttings.
- May 3 - 5, 2010 - Installed felt, 24 mil liner & 60 mil liner.
- May 5 - 7, 2010 - Hauled water on-site to hydrotest liner.
- May 13, 2010 - Liner hydrotested under Berry personnel supervision.
- July 9, 2010 - Completed installation of wildlife fence.
- August 16 - 19, 2010 - Posts & cables for bird net structure installed.
- August 31 - Sept 1, 2010 - Bird netting installed..

Going forward, the intended use of the Chevron J-20 pit will be for storage of produced water, prior to its beneficial re-use for well completion activities elsewhere on Berry's leases. Berry would like to temporarily utilize this pit for storage of produced water until planned centralized E&P waste management facilities are permitted and constructed elsewhere on Berry's leasehold. These facilities are expected to be brought online in the summer of 2012. Once these centralized facilities are brought online, the J-20 production pit will be closed and reclaimed per the COGCC 1000 series rules.

**2. Location Information**

Producing well (1) associated with the Chevron J-20 pit and the designated API number:

- CHEVRON # 20-31D - 05-045-14045

The latitude/longitude coordinates of the pit are 39.598447, -108.1888609.

### **3. Produced Water Disposal Method**

The vast majority of produced water to be stored in this pit will be put to beneficial re-use for completions on other well locations. There may be circumstances where produced water from this pit may need to be sent to disposal. At the present time, Berry utilizes the Danish Flats evaporation pit facility near Cisco, Utah for disposal.

A Form 26 containing additional information on produced water is attached with this submittal packet.

### **4. Sensitive Area Determination**

The following sensitive area determination was made utilizing Appendix Part B of the COGCC Rules, dated April 1, 2009.

**Box 1: Does the produced water to be placed in the pit meet WQCC standards for groundwater for the following contaminants of concern?**

Answer: No. A laboratory analysis of produced water from source wells on the J-20 pad indicated TDS is 17,000 mg/l, and chloride is 9,800 mg/l. Similarly, BTEX compounds in the produced water are above the standards listed in Appendix Part B.

**Box 2: Is the pit location underlain by an unconfined aquifer or recharge zone?**

Answer: Yes. Bedrock in the project area is highly fractured Uinta sandstone that may be hydrologically connected to nearby surface waters. While site-specific data do not exist to confirm the presence or absence of fractures in the vicinity of the pit, Bear Run Creek, a perennial stream, runs approximately 375 yards to the southeast of the location. This stream is fed by discharge from shallow aquifers and springs in the area.

**Conclusion:** The pit is located in a sensitive area. However, since the pit is double lined with both 24- and 60-mil liners, the pit will be hydrotested before being placed in service, and pit level monitoring will occur on a daily basis, the risk to water resources from use of this pit would be very low.

### **5. Design Basis**

At present, the well on the J-20 pad is producing approximately 1,600 barrels of water per month. Given the proposed pit has a capacity of 7,300 barrels, it can store over four months of water production.

If the proposed production pit were permitted, water would be placed in the pit at the rate of about 52 barrels per day. Water would accumulate in the pit over a period of weeks or months until it would be piped to other locations for well completions. During an active well completion, water could be withdrawn from the pit at the rate of up to 10,000 barrels per day (about 2 days to empty).

Assuming the pit was full and no water was needed for completions elsewhere; it would be removed by vacuum trucks at the rate of about 100 barrels per load and hauled off-site for disposal.

Prior to placement in the pit, produced water is stored in a tank battery on location where liquid hydrocarbons separate from the water by gravity. Virtually no condensate or other hydrocarbons are

placed in the pit. If floating hydrocarbons are observed on the pit, they are skimmed immediately per COGCC rules.

## **6. Attachments**

### **Site Plan**

An as-built drawing for the J-20 is attached to this submittal, which provides the dimensions and depth of the pit as it was constructed, and the locations of wellheads, separators, productions tanks, and the access road. The as-built also provides pit cross sections (longitudinal and transverse) and a design view cross section illustrating the liner foundation and liner specifications.

### **Leak Detection and Pit Level Monitoring System**

Berry proposes to install a pressure transducer in the J-20 pit to monitor fluid levels. The instrument will provide continuous data on the pit level and can be programmed to provide an alarm if the fluid level is too high, or if there is a sudden loss of fluid. In terms of leak detection, the fluid level will be monitored continuously, and if there is an unexplained loss of fluid, Berry operations personnel will immediately inspect the pit to assess whether or not there is a leak. Any leaks will be repaired at once.

### **Liner Inspection and Hydrotest**

Following the installation of the double liner in May 2010, the liner was inspected by Thomas Hogelin, Berry's construction foreman for any defects. No problems were identified. A hydrostatic test was then performed on May 13, 2010 to verify the liner was tight. Following the successful liner test, the pit was placed in service for well completions. No fluid losses were observed during completion and flowback operations.

## **7. Surface Water Quality Sampling Data**

To assess baseline water quality conditions and to monitor potential impacts associated with drilling and completions to date on Bear Run Creek, samples were collected in April of 2010. Two samples were collected from Bear Run Creek (L452290-01 & L452290-02) and analyzed by a laboratory.

Both sampling events confirmed that no impacts to the stream was occurring as a result of Berry's drilling and completions activities at the J-20 location as observed TDS and chloride levels in the streams were in the normal range. Volatile organic (BTEX) compounds were non-detect in both samples taken.

The laboratory results for surface water samples collected near the J-20 well pad are attached.

**COGIS - LOCATION Information**
 [Related](#)
 [GIS](#)
 [Doc](#)
 [Orders](#)
**CHEVRON-65S96W - #335841 Information****Status: XX**

|                     |                         |                     |                        |
|---------------------|-------------------------|---------------------|------------------------|
| Location ID:        | 335841                  | Location Name/No:   | CHEVRON-65S96W /20NWSE |
| Location Status:    | XX                      | Status Date:        | 4/14/2009              |
| Operator Name:      | BERRY PETROLEUM COMPANY | Operator Number:    | 10091                  |
| County:             | GARFIELD - #045         | Location:           | NWSE 20 5S 96W         |
| Facility Type:      | LOCATION                | Lat/Long:           | 39.59835/-108.188294   |
| Form 2A Document #: |                         | Form 2A Expiration: | N/A                    |

**Location Inventory**

|                       |                  |               |                   |
|-----------------------|------------------|---------------|-------------------|
| Special Purpose Pits: | Drilling Pits:   | Wells:        | Production Pits:  |
| Condensate Tanks:     | Water Tanks:     | Separators:   | Electric Motors:  |
| Gas or Diesel Motors: | Cavity Pumps:    | LACT Unit:    | Pump Jacks:       |
| Electric Generators:  | Gas Pipeline:    | Oil Pipeline: | Water Pipeline:   |
| Gas Compressors:      | VOC Combustor:   | Oil Tanks:    | Dehydrator Units: |
| Multi-Well Pits:      | Pigging Station: | Flare:        | Fuel Tanks:       |

**Facility Well(s)**

|              |                     |                |                                 |            |                  |
|--------------|---------------------|----------------|---------------------------------|------------|------------------|
| API Number:  | <u>05-045-12766</u> | Operator Name: | BERRY PETROLEUM COMPANY # 10091 | Well Name: | CHEVRON # 20-17D |
| Well Status: | XX                  |                |                                 | Location:  | NWSE 205S 96W    |
|              |                     |                |                                 |            |                  |
| API Number:  | <u>05-045-12767</u> | Operator Name: | BERRY PETROLEUM COMPANY # 10091 | Well Name: | CHEVRON # 20-18D |
| Well Status: | XX                  |                |                                 | Location:  | NWSE 205S 96W    |
|              |                     |                |                                 |            |                  |
| API Number:  | <u>05-045-12768</u> | Operator Name: | BERRY PETROLEUM COMPANY # 10091 | Well Name: | CHEVRON # 20-19D |
| Well Status: | XX                  |                |                                 | Location:  | NWSE 205S 96W    |
|              |                     |                |                                 |            |                  |
| API Number:  | <u>05-045-12769</u> | Operator Name: | BERRY PETROLEUM COMPANY # 10091 | Well Name: | CHEVRON # 20-30D |
| Well Status: | XX                  |                |                                 | Location:  | NWSE 205S 96W    |
|              |                     |                |                                 |            |                  |
| API Number:  | <u>05-045-12770</u> | Operator Name: | BERRY PETROLEUM COMPANY # 10091 | Well Name: | CHEVRON # 20-21D |
| Well Status: | XX                  |                |                                 | Location:  | NWSE 205S 96W    |
|              |                     |                |                                 |            |                  |
| API Number:  | <u>05-045-12771</u> | Operator Name: | BERRY PETROLEUM COMPANY # 10091 | Well Name: | CHEVRON # 20-28D |
| Well Status: | XX                  |                |                                 | Location:  | NWSE 205S 96W    |
|              |                     |                |                                 |            |                  |
| API Number:  | <u>05-045-14044</u> | Operator Name: | BERRY PETROLEUM COMPANY # 10091 | Well Name: | CHEVRON # 20-32D |
| Well Status: | XX                  |                |                                 | Location:  | NWSE 205S 96W    |
|              |                     |                |                                 |            |                  |
| API Number:  | <u>05-045-14045</u> | Operator Name: | BERRY PETROLEUM COMPANY # 10091 | Well Name: | CHEVRON # 20-31D |
| Well Status: | PR                  |                |                                 | Location:  | NWSE 205S 96W    |

# MULTI-WELL PLAN BOTTOM HOLE FOOTAGE

GRAPHIC SCALE IN FEET  
1" = 80 FEET

## AS-BUILT PIT INFO:

APPROX. PIT DIMENSIONS: 250' X 80'  
PIT DEPTH: 8'  
PIT CAPACITY: 7,300 bbl  
(w/ 2' FREEBOARD)

PIT LOW CORNER:  
Latitude: 39.598447  
Longitude: 108.188609

LOAD IN/OUT  
MANIFOLD LOCATION  
EXISTING  
PRODUCTION  
TANKS  
PROPOSED PUMP  
PROPOSED  
WATERLINE  
EXISTING  
GASLINE

EXISTING ACCESS  
ROAD



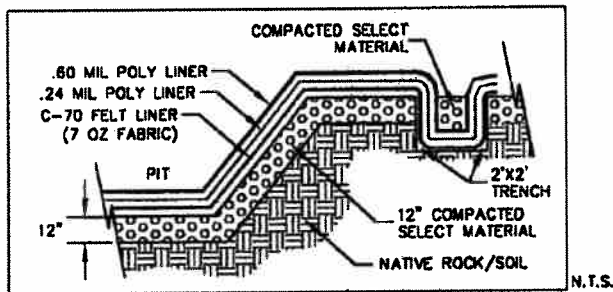
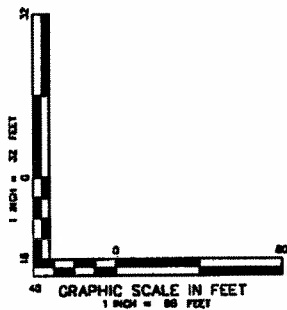
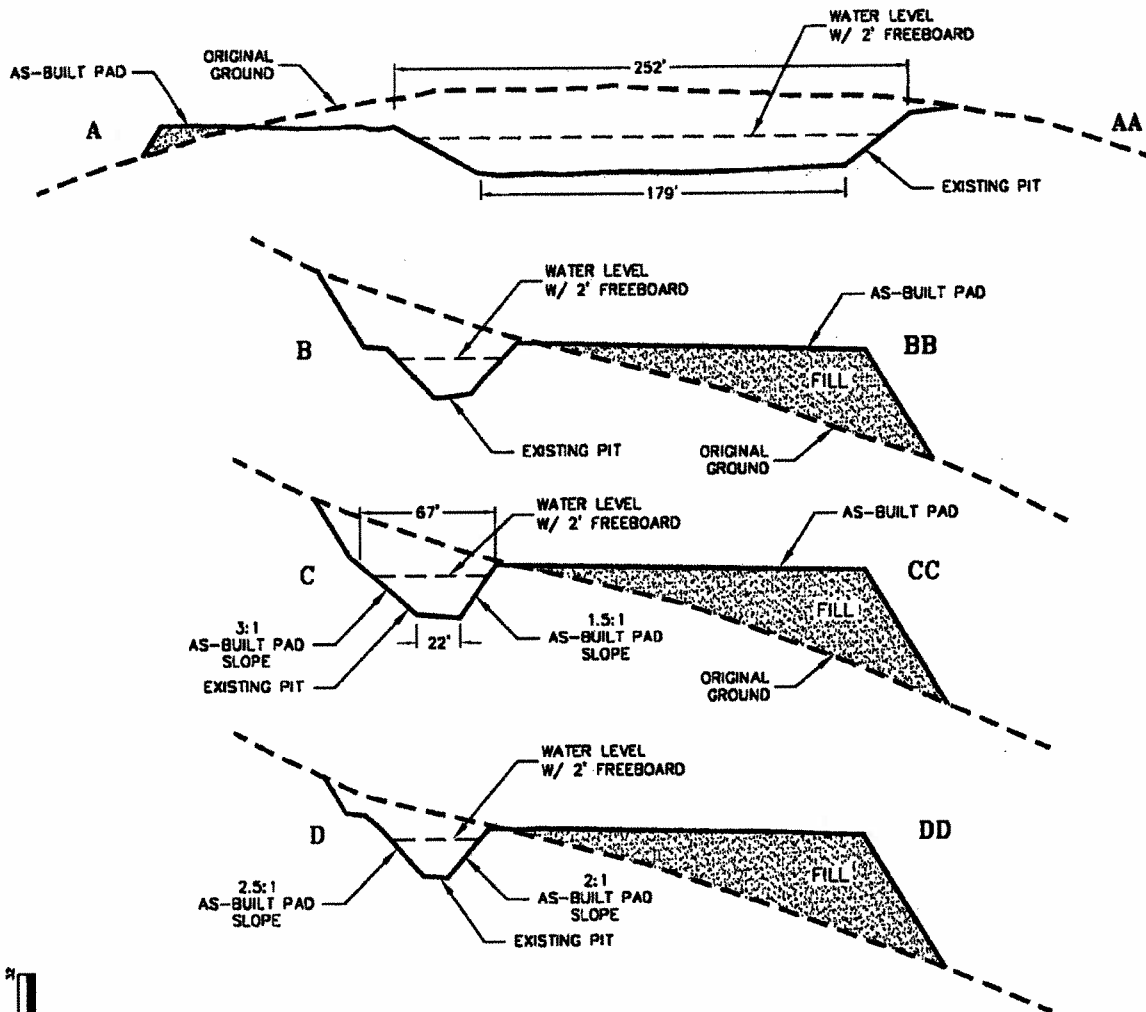
CONSTRUCTION SURVEYS, INC.  
0012 SUNRISE BLVD.  
SILT, CO 81652  
(970)876-5753

Chevron J20-596  
NW 1/4 SE 1/4 SECTION 20, T. 5 S., R. 36 W.  
BERRY PETROLEUM COMPANY

DATE: 05/11/11

SHEET: 1 of 2

# AS-BUILT PRODUCTION PIT X-SECTIONS



CLOSE UP X-SECTION VIEW OF BERRY TYPICAL DESIGN



CONSTRUCTION SURVEYS, INC. Chevron J20-596  
 0012 SUNRISE BLVD. NW 1/4 06 1/4 SECTION 20, T. 5 S., R. 96 W.  
 SILT, CO 81652 BERRY PETROLEUM COMPANY  
 (970)876-5753

DATE: 04/12/11

SHEET: 1 of 2

**Berry Petroleum Company**  
**Surface Water Sampling Data From Bear Run Creek**  
**Near Chevron J-20 Well Pad**



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Dave Nicholson  
Berry Petroleum Company - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

### Report Summary

Wednesday April 14, 2010

Report Number: L452290

Samples Received: 04/02/10

Client Project: 40737

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

Dave Nicholson  
Berry Petroleum Company - Denver, C  
1999 Broadway, Suite 3700  
Denver, CO 80202

April 14, 2010

Date Received : April 02, 2010  
Description :  
Sample ID : CD 29D  
Collected By : C. Gudorf  
Collection Date : 04/01/10 11:15

ESC Sample # : L452290-01

Site ID :  
Project # : 40737

| Parameter                   | Result | Det. Limit | Units | Method | Date     | Dil. |
|-----------------------------|--------|------------|-------|--------|----------|------|
| Chloride                    | 20.    | 1.0        | mg/l  | 9056   | 04/13/10 | 1    |
| Dissolved Solids            | 350    | 10.        | mg/l  | 2540C  | 04/07/10 | 1    |
| Iron, Dissolved             | 1.0    | 0.10       | mg/l  | 6010B  | 04/09/10 | 1    |
| Manganese, Dissolved        | 0.029  | 0.010      | mg/l  | 6010B  | 04/09/10 | 1    |
| Sodium, Dissolved           | 44.    | 0.50       | mg/l  | 6010B  | 04/09/10 | 1    |
| <b>Volatile Organics</b>    |        |            |       |        |          |      |
| Acetone                     | BDL    | 0.050      | mg/l  | 8260B  | 04/10/10 | 1    |
| Acrolein                    | BDL    | 0.050      | mg/l  | 8260B  | 04/10/10 | 1    |
| Acrylonitrile               | BDL    | 0.010      | mg/l  | 8260B  | 04/10/10 | 1    |
| Benzene                     | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Bromobenzene                | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Bromodichloromethane        | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Bromoform                   | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Bromomethane                | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| n-Butylbenzene              | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| sec-Butylbenzene            | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| tert-Butylbenzene           | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Carbon tetrachloride        | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Chlorobenzene               | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Chlorodibromomethane        | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Chloroethane                | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| 2-Chloroethyl vinyl ether   | BDL    | 0.050      | mg/l  | 8260B  | 04/10/10 | 1    |
| Chloroform                  | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| Chloromethane               | BDL    | 0.0025     | mg/l  | 8260B  | 04/10/10 | 1    |
| 2-Chlorotoluene             | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 4-Chlorotoluene             | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dibromo-3-Chloropropane | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dibromoethane           | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Dibromomethane              | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dichlorobenzene         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,3-Dichlorobenzene         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,4-Dichlorobenzene         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Dichlorodifluoromethane     | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,1-Dichloroethane          | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dichloroethane          | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,1-Dichloroethene          | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| cis-1,2-Dichloroethene      | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| trans-1,2-Dichloroethene    | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dichloropropane         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,1-Dichloropropene         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,3-Dichloropropane         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)



12065 Lebanon Rd.  
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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

April 14, 2010

Dave Nicholson  
Berry Petroleum Company - Denver, C  
1999 Broadway, Suite 3700  
Denver, CO 80202

ESC Sample # : L452290-01

Date Received : April 02, 2010  
Description :

Site ID :

Sample ID : CD 29D

Project # : 40737

Collected By : C. Gudorf  
Collection Date : 04/01/10 11:15

| Parameter                       | Result | Det. Limit | Units  | Method | Date     | Dil. |
|---------------------------------|--------|------------|--------|--------|----------|------|
| cis-1,3-Dichloropropene         | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| trans-1,3-Dichloropropene       | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 2,2-Dichloropropane             | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Di-isopropyl ether              | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Ethylbenzene                    | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Hexachloro-1,3-butadiene        | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Isopropylbenzene                | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| p-Isopropyltoluene              | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 2-Butanone (MEK)                | BDL    | 0.010      | mg/l   | 8260B  | 04/10/10 | 1    |
| Methylene Chloride              | BDL    | 0.0050     | mg/l   | 8260B  | 04/10/10 | 1    |
| 4-Methyl-2-pentanone (MIBK)     | BDL    | 0.010      | mg/l   | 8260B  | 04/10/10 | 1    |
| Methyl tert-butyl ether         | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Naphthalene                     | BDL    | 0.0050     | mg/l   | 8260B  | 04/10/10 | 1    |
| n-Propylbenzene                 | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Styrene                         | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,1,1,2-Tetrachloroethane       | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,1,2,2-Tetrachloroethane       | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,1,2-Trichloro-1,2,2-trifluoro | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Tetrachloroethene               | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Toluene                         | BDL    | 0.0050     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,3-Trichlorobenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,4-Trichlorobenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/13/10 | 1    |
| 1,1,1-Trichloroethane           | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,1,2-Trichloroethane           | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Trichloroethene                 | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Trichlorofluoromethane          | BDL    | 0.0050     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,3-Trichloropropane          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,4-Trimethylbenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,3-Trimethylbenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,3,5-Trimethylbenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Vinyl chloride                  | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Xylenes, Total                  | BDL    | 0.0030     | mg/l   | 8260B  | 04/10/10 | 1    |
| Surrogate Recovery              |        |            |        |        |          |      |
| Toluene-d8                      | 95.2   |            | % Rec. | 8260B  | 04/10/10 | 1    |
| Dibromofluoromethane            | 111.   |            | % Rec. | 8260B  | 04/10/10 | 1    |
| 4-Bromofluorobenzene            | 104.   |            | % Rec. | 8260B  | 04/10/10 | 1    |

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 04/14/10 12:04 Printed: 04/14/10 12:05



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Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

April 14, 2010

Dave Nicholson  
Berry Petroleum Company - Denver, C  
1999 Broadway, Suite 3700  
Denver, CO 80202

ESC Sample # : L452290-02

Date Received : April 02, 2010  
Description :

Site ID :

Sample ID : CD 29U

Project # : 40737

Collected By : C. Gudorf  
Collection Date : 04/01/10 11:30

| Parameter                   | Result | Det. Limit | Units | Method | Date     | Dil. |
|-----------------------------|--------|------------|-------|--------|----------|------|
| Chloride                    | 10.    | 1.0        | mg/l  | 9056   | 04/13/10 | 1    |
| Dissolved Solids            | 370    | 10.        | mg/l  | 2540C  | 04/07/10 | 1    |
| Iron, Dissolved             | BDL    | 0.10       | mg/l  | 6010B  | 04/09/10 | 1    |
| Manganese, Dissolved        | BDL    | 0.010      | mg/l  | 6010B  | 04/09/10 | 1    |
| Sodium, Dissolved           | 38.    | 0.50       | mg/l  | 6010B  | 04/09/10 | 1    |
| Volatile Organics           |        |            |       |        |          |      |
| Acetone                     | BDL    | 0.050      | mg/l  | 8260B  | 04/10/10 | 1    |
| Acrolein                    | BDL    | 0.050      | mg/l  | 8260B  | 04/10/10 | 1    |
| Acrylonitrile               | BDL    | 0.010      | mg/l  | 8260B  | 04/10/10 | 1    |
| Benzene                     | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Bromobenzene                | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Bromodichloromethane        | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Bromoform                   | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Bromomethane                | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| n-Butylbenzene              | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| sec-Butylbenzene            | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| tert-Butylbenzene           | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Carbon tetrachloride        | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Chlorobenzene               | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Chlorodibromomethane        | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Chloroethane                | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| 2-Chloroethyl vinyl ether   | BDL    | 0.050      | mg/l  | 8260B  | 04/10/10 | 1    |
| Chloroform                  | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| Chloromethane               | BDL    | 0.0025     | mg/l  | 8260B  | 04/10/10 | 1    |
| 2-Chlorotoluene             | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 4-Chlorotoluene             | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dibromo-3-Chloropropane | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dibromoethane           | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Dibromomethane              | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dichlorobenzene         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,3-Dichlorobenzene         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,4-Dichlorobenzene         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| Dichlorodifluoromethane     | BDL    | 0.0050     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,1-Dichloroethane          | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dichloroethane          | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,1-Dichloroethene          | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| cis-1,2-Dichloroethene      | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| trans-1,2-Dichloroethene    | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,2-Dichloropropane         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,1-Dichloropropene         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |
| 1,3-Dichloropropane         | BDL    | 0.0010     | mg/l  | 8260B  | 04/10/10 | 1    |

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)



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Est. 1970

# REPORT OF ANALYSIS

April 14, 2010

Dave Nicholson  
Berry Petroleum Company - Denver, C  
1999 Broadway, Suite 3700  
Denver, CO 80202

ESC Sample # : L452290-02

Date Received : April 02, 2010  
Description :

Site ID :

Sample ID : CD 29U

Project # : 40737

Collected By : C. Gudorf  
Collection Date : 04/01/10 11:30

| Parameter                       | Result | Det. Limit | Units  | Method | Date     | Dil. |
|---------------------------------|--------|------------|--------|--------|----------|------|
| cis-1,3-Dichloropropene         | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| trans-1,3-Dichloropropene       | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 2,2-Dichloropropane             | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Di-isopropyl ether              | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Ethylbenzene                    | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Hexachloro-1,3-butadiene        | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Isopropylbenzene                | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| p-Isopropyltoluene              | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 2-Butanone (MEK)                | BDL    | 0.010      | mg/l   | 8260B  | 04/10/10 | 1    |
| Methylene Chloride              | BDL    | 0.0050     | mg/l   | 8260B  | 04/10/10 | 1    |
| 4-Methyl-2-pentanone (MIBK)     | BDL    | 0.010      | mg/l   | 8260B  | 04/10/10 | 1    |
| Methyl tert-butyl ether         | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Naphthalene                     | BDL    | 0.0050     | mg/l   | 8260B  | 04/10/10 | 1    |
| n-Propylbenzene                 | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Styrene                         | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,1,1,2-Tetrachloroethane       | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,1,2,2-Tetrachloroethane       | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,1,2-Trichloro-1,2,2-trifluoro | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Tetrachloroethene               | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Toluene                         | BDL    | 0.0050     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,3-Trichlorobenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/13/10 | 1    |
| 1,2,4-Trichlorobenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/13/10 | 1    |
| 1,1,1-Trichloroethane           | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,1,2-Trichloroethane           | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Trichloroethene                 | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Trichlorofluoromethane          | BDL    | 0.0050     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,3-Trichloropropane          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,4-Trimethylbenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,2,3-Trimethylbenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| 1,3,5-Trimethylbenzene          | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Vinyl chloride                  | BDL    | 0.0010     | mg/l   | 8260B  | 04/10/10 | 1    |
| Xylenes, Total                  | BDL    | 0.0030     | mg/l   | 8260B  | 04/10/10 | 1    |
| Surrogate Recovery              |        |            |        |        |          |      |
| Toluene-d8                      | 97.3   |            | % Rec. | 8260B  | 04/10/10 | 1    |
| Dibromofluoromethane            | 110.   |            | % Rec. | 8260B  | 04/10/10 | 1    |
| 4-Bromofluorobenzene            | 104.   |            | % Rec. | 8260B  | 04/10/10 | 1    |

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 04/14/10 12:04 Printed: 04/14/10 12:05

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

SOURCE OF PRODUCED WATER FOR DISPOSAL

This form must be completed for any new disposal site and for any change in sources of produced water for an existing disposal site.

Complete the  
Attachment Checklist

|   |                             |
|---|-----------------------------|
| OGCC Operator Number: 10091               | Contact Name and Telephone: |
| Name of Operator: Berry Petroleum Company | Bryan Burns                 |
| Address: 1999 Broadway, Suite 3700        | No: 303-999-4245            |
| City: Denver State: CO Zip: 80202         | Fax: 303-999-4345           |

| Oper OGCC                  |  |
|----------------------------|--|
| Chemical Analysis of fluid |  |
|                            |  |
|                            |  |
|                            |  |
|                            |  |

|  |  |
|--|--|
| OGCC Disposal Facility Number:             | Operator's Disposal Facility Number: J-20                                    |
| Operator's Disposal Facility Name: Chevron | Location (QtrQtr, Sec, Twp, Rng, Meridian): NWSE Section 20, T5S R96W 6th PM |
| Address: N/A                               | City: N/A State: CO Zip: N/A County: Garfield                                |

If more space is required,  
attach additional sheet.

Add Source: OGCC Lease No: 335841 API No: 05-045-14045 Well Name & No: Chevron 20-31D  
☒ Operator Name: Berry Petroleum Company Operator No: 10091  
Delete Source: Location: QtrQtr: NWSE Section: 20 Township: 5S Range: 96W Producing Formation: Williams Fork  
☐ Analysis Attached? ☒ Yes ☐ No Transported to disposal site via: ☒ Pipeline ☒ Truck TDS: 17,000 mg/l

Add Source: OGCC Lease No: API No: Well Name & No:  
☐ Operator Name: Operator No:  
Delete Source: Location: QtrQtr: Section: Township: Range: Producing Formation:  
☐ Analysis Attached? ☐ Yes ☐ No Transported to disposal site via: ☐ Pipeline ☐ Truck TDS:

Add Source: OGCC Lease No: API No: Well Name & No:  
☐ Operator Name: Operator No:  
Delete Source: Location: QtrQtr: Section: Township: Range: Producing Formation:  
☐ Analysis Attached? ☐ Yes ☐ No Transported to disposal site via: ☐ Pipeline ☐ Truck TDS:

Add Source: OGCC Lease No: API No: Well Name & No:  
☐ Operator Name: Operator No:  
Delete Source: Location: QtrQtr: Section: Township: Range: Producing Formation:  
☐ Analysis Attached? ☐ Yes ☐ No Transported to disposal site via: ☐ Pipeline ☐ Truck TDS:

Add Source: OGCC Lease No: API No: Well Name & No:  
☐ Operator Name: Operator No:  
Delete Source: Location: QtrQtr: Section: Township: Range: Producing Formation:  
☐ Analysis Attached? ☐ Yes ☐ No Transported to disposal site via: ☐ Pipeline ☐ Truck TDS:

Add Source: OGCC Lease No: API No: Well Name & No:  
☐ Operator Name: Operator No:  
Delete Source: Location: QtrQtr: Section: Township: Range: Producing Formation:  
☐ Analysis Attached? ☐ Yes ☐ No Transported to disposal site via: ☐ Pipeline ☐ Truck TDS:

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Bryan Burns Signed:   
Title: Environmental Specialist Date: 5-18-11

OGCC Approved: Title: Date:

CONDITIONS OF APPROVAL, IF ANY:



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
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Tax I.D. 62-0814289

Est. 1970

Dave Nicholson  
Berry Petroleum Company - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

### Report Summary

Thursday May 12, 2011

Report Number: L514659

Samples Received: 05/06/11

Client Project: 202-01

Description: Berry Pit Permitting

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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YOUR LAB OF CHOICE

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Est. 1970

# REPORT OF ANALYSIS

May 12, 2011

Dave Nicholson  
Berry Petroleum Company - Denver, C  
1999 Broadway, Suite 3700  
Denver, CO 80202

ESC Sample # : L514659-02

Date Received : May 06, 2011  
Description : Berry Pit Permitting

Site ID :

Sample ID : J-20 PW

Project # : 202-01

Collected By : D. Nicholson  
Collection Date : 05/05/11 13:20

| Parameter  | Result | Det. Limit | Units    | Method  | Date     | Dil. |
|--|--------|------------|----------|---------|----------|------|
| Bromide  | 85.    | 1.0        | mg/l     | 300.0   | 05/06/11 | 1    |
| Chloride   | 9800   | 100        | mg/l     | 300.0   | 05/07/11 | 100  |
| Fluoride   | 0.57   | 0.50       | mg/l     | 300.0   | 05/07/11 | 5    |
| Nitrate  | BDL    | 0.10       | mg/l     | 300.0   | 05/07/11 | 1    |
| Nitrite  | BDL    | 0.10       | mg/l     | 300.0   | 05/06/11 | 1    |
| Sulfate  | BDL    | 5.0        | mg/l     | 300.0   | 05/06/11 | 1    |
| Alkalinity   | 730    | 20.        | mg/l     | 2320B   | 05/06/11 | 1    |
| pH   | 6.3    |            | su       | 4500H-B | 05/07/11 | 1    |
| Phosphate, Ortho                                     | BDL    | 0.62       | mg/l     | 4500P-E | 05/07/11 | 25   |
| Specific Conductance                                 | 700    |            | umhos/cm | 120.1   | 05/11/11 | 1    |
| Dissolved Solids                                     | 17000  | 10.        | mg/l     | 2540C   | 05/12/11 | 1    |
| Selenium, Dissolved                                  | 0.16   | 0.010      | mg/l     | 200.8   | 05/10/11 | 10   |
| Calcium, Dissolved                                   | 150    | 0.50       | mg/l     | 200.7   | 05/08/11 | 1    |
| Iron, Dissolved                                      | 86.    | 0.10       | mg/l     | 200.7   | 05/08/11 | 1    |
| Magnesium, Dissolved                                 | 14.    | 0.10       | mg/l     | 200.7   | 05/08/11 | 1    |
| Manganese, Dissolved                                 | 1.4    | 0.010      | mg/l     | 200.7   | 05/08/11 | 1    |
| Potassium, Dissolved                                 | 75.    | 0.50       | mg/l     | 200.7   | 05/08/11 | 1    |
| Sodium, Dissolved                                    | 5500   | 5.0        | mg/l     | 200.7   | 05/09/11 | 10   |
| Benzene  | 18.    | 0.050      | mg/l     | 602     | 05/09/11 | 100  |
| Toluene  | 36.    | 1.2        | mg/l     | 602     | 05/10/11 | 250  |
| Ethylbenzene   | 0.68   | 0.025      | mg/l     | 602     | 05/07/11 | 50   |
| Total Xylene   | 12.    | 0.075      | mg/l     | 602     | 05/07/11 | 50   |
| Surrogate Recovery(%)<br>a,a,a-Trifluorotoluene(PID) | 105.   |            | % Rec.   | 602     | 05/07/11 | 50   |

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 05/12/11 13:31 Printed: 05/12/11 13:31

L514659-02 (PORTHO) - diluted due to turbidity interference

L514659-02 (PH) - 6.3@19.3c

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☒ Site/Facility Closure ☐ Other (describe):

OGCC Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No:

OGCC Operator Number: 10091

Name of Operator: Berry Petroleum Company

Address: 1999 Broadway, Suite 3700

City: Denver State: CO Zip: 80202

Contact Name and Telephone:

Bryan Burns

No: 3039994245

Fax: 3039994345

API Number: Environmental Specialist

County: Garfield / 045

Facility Name: Chevron

Facility Number: J-20

Well Name: Chevron

Well Number: 20-31D

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NWSE, Sec. 20, T5S, R96W, 6th PM Latitude: 39.598447 Longitude: -108.188609

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Drilling fluids, produced water - No Impacts Identified

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☒ Y ☐ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Parachute-Irigul-Rhone association, 25-50% slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Bear Run Creek

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):

- ☐ Soils  
☐ Vegetation  
☐ Groundwater  
☐ Surface Water

Extent of Impact:

N/A  
N/A  
N/A  
N/A

How Determined:

**REMEDIAL WORKPLAN**

Describe initial action taken (if previously provided, refer to that form or document):

This Form 27 is intended to notify the COGCC of closure of the Chevron J-20 drilling pit. There were no known spills or releases of any kind to the environment, so no remedial actions have been taken, apart from removal of drilling solids from the pit for land treatment on the well location.

Describe how source is to be removed:

N/A

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

When the pit was closed, drilling fluids were recovered by trucks for beneficial reuse at other drilling locations. Pit solids, such as cuttings, were blended with amendments and piled on the location for land treatment prior to eventual beneficial reuse.



Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: \_\_\_\_\_  
Facility Name & No: \_\_\_\_\_

Page 2

**REMEDATION WORKPLAN (Cont.)**

OGCC Employee: \_\_\_\_\_

**If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):**

No impacts to groundwater have been identified.

**Describe reclamation plan.** Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Berry is proposing to convert the Chevron J-20 drilling pit to a production pit. Reclamation of the pit is proposed after the use of the production pit is complete. A Form 27 describing the final closure of the production pit will include reclamation details.

**Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.**

**Is further site investigation required?** ☐ Y ☒ N If yes, describe:

Since no impacts have occurred, no sampling or remediation activities have been carried out.

**Final disposition of E&P waste** (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Drilling pit solids are presently undergoing land treatment on the Chevron J-20 location. Those solids will be tested for compliance with Table 910-1. Once the solids achieve the 910-1 limits, they will be put to beneficial reuse or backfilled into the pit excavation at the time of final pit reclamation.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: \_\_\_\_\_ Date Site Investigation Completed: \_\_\_\_\_ Date Remediation Plan Submitted: \_\_\_\_\_  
Remediation Start Date: \_\_\_\_\_ Anticipated Completion Date: \_\_\_\_\_ Actual Completion Date: \_\_\_\_\_

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Bryan Burns

Signed: \_\_\_\_\_

Title: Environmental Specialist

Date: 5-23-2011

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_