STATE OF COLORADO
OIL & GAS
CONSERVATION COMMISSION

DEPARTMENT OF NATURAL RESOURCES
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December 7, 2011

Mr. Mark Voloshin
P.O. Box 981
Craig, Colorado 81626

RE: COGCC Complaint #200327740
File Review and Soil Analytical Results
Buck Peak State 1-16; API Number 05-081-06178
SWNE Section 16, Township 6 North, Range 90 West

Dear Mr. Voloshin,

This letter provides an update of activities completed by the Colorado Oil and Gas Conservation Commission (COGCC) as it relates to potential surface damage from an alleged well blow out approximately seven years ago (2004).

On July 11, 2011, COGCC staff completed a site visit and on July 26, 2011, COGCC staff, representatives from HRM Resources, Inc., and you met at the Buck Peak State 1-16(API Number 05-081-06178) to observe the surface surroundings and collect surficial soil samples in and around the alleged impacted area. You indicated that about seven (7) years ago when Flying "J" was operating the well, there was a mis-calculation with a packer and some back pressure built up causing the well blow out. Apparently, this is when the environmental surface damaged occurred, and a worker went to the hospital.

An approximate 90 feet wide by 200 feet long, crescent shaped area, is located immediately east of the former site production area at an elevation approximately 15 feet higher from the well and former production equipment area (Attachment A).

You also mentioned that a truck got stuck along the access road approximately 800 feet east of the Buck Peak State 1-16 well and dumped an unknown quantity of water to the ground surface (this was an approximate 10 foot by 10 foot area that did not have a full growth of alfalfa at the time of the July 26, 2011, site visit.)

Field Observation:
At the time of the July 11, 2011 site visit, hoses, steel racks, pipes protruding from the ground and other materials were noted to be present in the former production equipment area. During the July 26, 2011, site visit, much of the material had been removed in the area of former production equipment area. The pipes protruding from the ground were still present as well as some possible oil staining in areas. The crescent shaped area immediately east of the former production areas was still void of vegetation while the surrounding area had an alfalfa crop growing. As indicated earlier an approximate 10 foot by 10 foot area along the access road where water was dumped onto the ground surface did not have a full growth of alfalfa at the time of the July 26, 2011, site visit.

You pointed out a wetland/spring area approximately 500 feet northwest of the well pad and a flowing spring near County Road 33 (approximately 0.75 mile to the west northwest of the well pad). A flowing

spring was not observed 500 feet northwest of the well pad, however; vegetation indicative of wetlands were observed. The spring near County Road 33 did not appear to have visual presence of hydrocarbons at the time of the July 26, 2011 site visit.

Field Sampling:
At the time of the July 26, 2011 site visit, seven (7) soil samples were collected in and near the vicinity of the alleged impacted area. The sample descriptions, notations, and latitude/longitude coordinates are presented below, and the approximate sample locations are presented on Attachment B.

- HRM1-BK: Background sample in growing alfalfa field ~300 east-southeast of the UIC well
  Silt (ML), yellow-brown, clayey, slightly sandy, slightly moist; depth 0.5' to 1.0'
  Lat 40.479082; Long -107.492232

- HRM2-E Per: Non-vegetated area ~210' east of UIC well
  Clay (CL) brown, silty, slightly clayey, slightly plastic, slightly moist; depth 0.5' to 1.0'
  Lat 40.479088; Long -107.492620

- HRM3-N Cen: Non-vegetated area `160' east-northeast of UIC well
  Clay (CL) brown, silty, moderately plastic, slightly moist; depth 0.5' to 1.0'
  Lat 40.479184; Long -107.492788

- HRM4-S Cen: Non-vegetated area ~160' southeast of UIC well
  Sand (SM) yellow-brown, very fine grained, very silty, slightly clayey, slightly moist; depth 0.5' to 1.0'
  Lat 40.478899; Long -107.492789

- HRM5-S Pad: On well pad ~85' southeast of UIC well in area where there had been storage of equipment and supplies
  Sand (SW) brown, scattered gravel, silty and clayey, slightly moist to moist, depth 0.25' to 0.75'
  Lat 40.478985; Long -107.493081

- HRM6-S Cut: Near top of cut wall ~120' east-southeast of UIC well
  Clay (CL) medium to dark brown w/black material, silty, slightly plastic, slightly moist; depth 0.0' to 0.5'
  Lat 40.479066; Long -107.492943

- HRM7-Wtr Sp: Area of old produce water spill along road ~800' due east of UIC well
  Clay (CL) brown, very silty, trace sand, very slightly moist to dry, very slightly plastic; depth 0.0' to 0.5'
  Lat 40.478394; Long -107.489337

Swamp and sewer odors were noted at sample locations on the pad, on the cut and on the potentially impacted area approximately 6 to 8 inches below the ground surface.

Analytical Results:
The analytical data indicate that 1.4 mg/kg of gasoline range organics (GRO) was detected in the sample collected in the cut near the pad (HRM6). Diesel Range Organics (DRO) where detected in all samples (1.8 mg/kg to 98 mg/kg) with the lowest concentration detected in the background sample (HRM1) and the highest concentration detected in samples collected from the pad (HRM5 and HRM6).

The lab reported "Motor Oil" with a footnote. The footnote states: *This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline, JP-8, diesel, mineral spirits, motor oil, Stoddard solvent, or bunker C.*

The "Motor Oil" was reported in all of the samples collected and ranged in concentrations from 12 mg/kg (background sample, HRM1) to 550 mg/kg (sample collected from the pad, HRM5).

Calcium was detected at a concentration of 44,000 mg/kg in the background sample (HRM1), and at concentrations ranging from 20,000 mg/kg to 32,000 mg/kg in the samples collected from the potential impacted area (HRM2, HRM3, and HRM4), and from 2500 mg/kg to 10,000 mg/kg in the samples collected from water spill area and the pad, HRM7 and HRM5 respectively.

Total alkalinity as CaCO3 was detected at a concentration of 730 mg/kg in the background sample (HRM1), at 100 mg/kg in the water spill area (HRM7), and ranged from 490 mg/kg to 1300 mg/kg in the remaining samples.

Nitrate as Nitrogen (NO3) was only detected at 2.5 mg/kg in HRM1 (the background sample), and not detected in the other remaining samples. Nitrite as Nitrogen (NO4), and Sulfate (SO4) were not detected in any of the samples. Sodium adsorption ratio (SAR), pH, and electrical conductivity (EC) had very similar parameters, and within the COGCC 910-1 standards in all of the samples analyzed. The 910-1 standards are presented as Attachment C.

Boron was detected in all samples and exceeded the 910-1 standards in one sample (HRM5 on the pad) at 4.1 mg/kg. The 910-1 standard is 2.0 mg/kg.

All other constituents and parameters sampled and analyzed for Potassium (K) had very similar concentrations (1,800 mg/kg in HRM1 to 2,500 mg/kg in HRM7); Magnesium (Mg) concentrations ranged from 3,100 mg/kg in sample HRM5 to 5,800 mg/kg in HRM1. Samples HRM4 and HRM 7 had concentrations of 42,000 mg/kg and 2, 4000 mg/kg respectfully. Sodium (Na) and Chloride were not detected in any of the samples.

Graphic presentation of some of the analytical is presented in Attachment D, and the full analytical report is presented in Attachment E.

COGCC File Review:

The COGCC completed a review of their file for the Buck Peak State 1-16 well and location. This well was completed on October 26, 1972, in the Niobrara Formation and produced until 1986 when the well was temporarily abandoned. The well was subsequently converted to a disposal well. Production records indicate that the well was shut in from 1986 until 2001; the well has been either injecting or shut-in since 2001 to the present. Additionally, records in the file did not contain indication of a well blow out, injury to a worker, or a reported spill in the field northeast of the well location along the access road.

Produced water analytical data collected in 2001 from the source well for injection into the Buck Peak State 1-16 indicate the water contains concentrations of Calcium at 520 mg/L, Sodium at 14,950 mg/L, and Chloride at 23300 mg/L. Sulfate was not detected in the produced water sample.

A pit (Facility ID 111176) was determined to be associated with the Buck Peak State 1-16 location. The pit was constructed circa 1973 and was 12 feet by 12 feet by 6 feet in dimension. In July 1974, an inspection indicated that the pit was observed to be unlined with 100% oil in the bottom. An inspection

performed on July 12, 1984 noted "oil saturated ground 25 feet by 10 feet near the pump." The pit was not present during the July 2011 site visits. The pit appears to be present (in the southeast portion of the pad) in a 1990 aerial photo. Flying "J" reported closing the pit in 1997 but no assessment of the soil beneath or adjacent to the pit was provided.

Conclusions/Recommendations:
The well file and analytical data do not provide evidence that the area void of vegetation has been impacted by oil and gas activities. The analytical signatures of the source for produced water being injected into the Buck Peak State 1-16 does not resemble the analytical data derived from the soil samples collected in July 2011. Na and Cl were not detected, so there is no indication of produced water spill based on high NaCl produced water.

The COGCC recommends the following activities to better determine whether the area adjacent to the Buck Peak State 1-16 well pad has been impacted by oil and gas activities.

- Review historic land use (aerial photos);
- Interview the surface owner regarding land use (crops grown and materials applied to the crops) over the past 10 years;
- Interview the oil and gas operator regarding historic use of the area over the past 10 years;
- Collect additional soil samples at various depths in the area that has been potentially impacted, analyzing for agricultural chemicals including herbicides;
- Survey the area for springs and seeps and collect water samples for hydrocarbons and major cations and anions;
- Review the mechanical integrity tests of the well with COGCC Engineering staff; and
- The operator shall provide closure documentation of the pit. If they cannot provide this information, then the operator shall prepare a Form 27 to investigate and properly document the closure of the pit in accordance to the existing 900 and 1000 Series Rules.

If you should have any questions, please contact me via e-mail (alex.fischer@state.co.us) or by phone at (303) 894-2100 Extension 5138.

Respectfully,

Alex Fischer

Digitally signed by Alex Fischer
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Alex Fischer, P.G.
Environmental Supervisor, Western Colorado
Colorado Oil and Gas Conservation Commission

Enclosures: Attachment A - Buck Peak State 1-16 Photos, July 11, 2011
Attachment B - Soil Sample Locations, July 26, 2011
Attachment C – Table 910-1 Concentration Levels
Attachment D – Analytical Graphic Presentation
Attachment E – ALS Analytical Report

Cc: David Neslin, COGCC Director
Debbie Baldwin, COGCC Environmental Manager
Kris Neidel, COGCC Area Field Inspector
Pete Milonas, Acting Director – State Land Board
Jeff Comstock, Director Moffat County Natural Resources Department
Roger Huston, HRM Resources, LLC
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