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WORKPLANS

DATE:

8/29/2007

Chevron

Keith Innes
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August 29, 2007

Wayne Price
Environmental Bureau Chief
Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Investigatory Work Plan Re: Lovington Municipal Well #17

Dear Wayne,

Thank you for meeting with me and other Chevron representatives on July 31. Enclosed as discussed at that meeting and as requested in your April 13, 2007 letter is an Investigatory Work Plan (WP). The WP is focused on assessing the soil and groundwater around the City of Lovington Municipal Well # 17 (MW#17) in an initial attempt to ascertain potential sources of the benzene and chloride that have been detected there. This investigation is designed to provide guidance regarding a path forward. Consequently, once the data have been analyzed I propose that we meet again to reach consensus on how best to proceed.

On the other matters we discussed in the meeting, I can update you as follows:

- Shallow Casing Leaks on P&A Wells: It is part of our standard procedure to test the production casing during plugging operations. This test is done after the lower plugs are set. If a leak is detected, notification is made and a plan is put together under the advisement of the local OCD office. My information indicates that we have had no such leaks during our plugging operations since Chevron assumed operatorship in 2005.

- Lovington Field Map: We are enclosing a copy of the map that you requested in our meeting.

We appreciate the Division's interest in expediting an evaluation of potential sources to MW#17 and look forward to working collaboratively toward that end. Please do not hesitate to call me with any questions or concerns. Thank you.

Sincerely,

Keith Innes

cc. w/encl. Mark E. Fesmire, P.E., Director
cc. Matt Hudson
Paul Owen
Carol Lear

Investigation Work Plan

Area Surrounding City of Lovington Water Well #17
Lovington Paddock/San Andres Units
Lea County, New Mexico

August 30, 2007

This work plan details the proposed initial assessment of potential petroleum hydrocarbons and chlorides in the area of the Lovington Paddock/San Andres Units surrounding City of Lovington Water Well #17 (WW#17). The purpose of this investigation is to identify, if any, petroleum hydrocarbons or chlorides in the soil and/or groundwater that may be a source of dissolved compounds recently detected in WW#17. The results of this initial investigation will be used to determine what, if any, further assessment is warranted.

Soil Boring and Sample Collection

A total of eight (8) soil borings will be advanced in an area surrounding WW#17. The approximate locations of the borings are shown on Figure 1. The borings will be advanced using air-rotary drilling techniques to the water table (approximately 90 feet below ground surface). The borings will be sampled continuously, and the soil lithology will be recorded on the field log. The samples will be field screened at 2-foot intervals for organic vapors using a flame ionization detector (FID).

Two samples from each boring will be collected for laboratory analysis. One sample will be collected from the interval yielding the highest FID reading, and one sample will be collected from the interval just above the water table. If no elevated FID readings are recorded, or if only the water-table interval yields FID readings, the shallower sample will be collected from the surface interval (0-2 ft below ground surface). The samples will be sent to the laboratory for the following analyses:

- Volatile Organic Compounds (VOCs), using USEPA Method 8260B,
- Semi-volatile Organic Compounds (SVOCs), using USEPA Method 8270C,
- Polynuclear Aromatic Hydrocarbons (PAHs), using USEPA Method 8100, and
- Total Petroleum Hydrocarbons (TPH), using USEPA Method 8015 Modified.
- Chlorides, using USEPA Method 300

Groundwater Monitoring Well Installation and Sample Collection

Groundwater monitoring wells will be installed at four of the boring locations. Which borings will be converted to monitoring wells will be determined based on the field screening; however, at a minimum one monitoring well will be installed hydraulically upgradient of WW#17 and two monitoring wells will be installed hydraulically downgradient. The wells will consist of 4-inch-diameter PVC with 20 feet of screen. The wells will be screened such that 5 feet of screen will be above the water table and 15 feet of screen will be below the water table. Appropriately sized silica sand will be placed around the screen to approximately 2 feet above the top of the screen, followed by a minimum 2-foot bentonite seal. The wells will then be grouted to the surface and

completed above grade with 4-foot concrete pads and protective casings. Well development will be conducted with a surge block (or equivalent). The locations and tops of casing elevations will be surveyed to the nearest 0.01-inch by a licensed professional surveyor.

Water level and total depth will be measured at each well using a dual-electrode electronic groundwater interface probe. The well will then be purged and sampled using a submersible pump in accordance with NMOCD protocol. The water level will be allowed to recover to a minimum of 80% of the initial static water level before sampling.

The groundwater samples will be submitted to the laboratory for the following analyses:

- VOCs, using USEPA Method 8260B,
- SVOCs, using USEPA Method 8270C,
- PAHs, using USEPA Method 8100,
- TPH, using USEPA Method 8015 Modified,
- RCRA Metals, using USEPA Method 6010/7000 Series, and
- Major Cations/Anions, using various USEPA or standard methods.
- pH and specific conductance will be measured in the field.

Reusable sampling equipment (e.g., groundwater interface probe, submersible pump, etc.) will be decontaminated prior to use and between samples. Equipment will be cleaned with tap water and low-phosphate soap (Liquinox or similar) using a brush if necessary, rinsed thoroughly with analyte-free water, and allowed to air dry.

Quality Assurance/Quality Control

Chain-of-custody procedures will be followed to maintain and document sample possession. A project specific chain-of-custody record will be utilized by field personnel to document possession of all samples collected for chemical analysis. This record will include, but is not limited to, the following information:

- Project name and number
- Name(s) and signatures of samplers
- Sample identification number and location
- Date and time of collection
- Number and type of containers
- Required analyses
- Laboratory name and address
- Courier
- Signatures documenting change of sample custody

Chain-of-custody forms will accompany samples at all times. When transferring possession of the samples, the individuals relinquishing and receiving the samples will sign, date, and note the time of transfer on the record. The chain-of-custody form will be placed in a sealed plastic bag and taped to the inside of the sample chest. The sample chest will be securely sealed prior to presentation to the delivery service. A commercial delivery service (i.e., FedEx) will be identified by company name only. The delivery service is not required to sign the chain of custody.

Reporting

Following the investigation, Chevron will submit a report to NMOCD documenting the results. The report will include the following:

- Sample location map,
- Soil boring logs,
- Well construction diagrams,
- Groundwater flow information/potentiometric surface map
- Tabular analytical data, and
- Recommendations for further assessment, if warranted.