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MEMORANDUM

TO: Mayor Troxell and Councilmembers  
FROM: Laurie Kadrich, CDNS Director *LK*  
Lucinda Smith, Environmental Services Director *LR*  
Darin Atteberry, City Manager *DA*  
THRU: Jeff Mihelich, Deputy City Manager *JM*  
Karen Cumbo, PDT Director  
DATE: April 30, 2015  
SUBJECT: Oil and Gas Update

Summary

This memo provides City Council with the results of three reports commissioned by the City of Fort Collins related to oil and gas activity in Fort Collins. The first two reports were commissioned to help the City assess the availability of data needed to *fully study the impacts of hydraulic fracturing on property values and human health*, as directed by the City voter-approved 5-year moratorium on fracking, passed in November 2013.

Both the property values data report and the health impacts data report conducted a comprehensive literature review and found that there was not enough data currently available for the City to fully evaluate fracking impacts on property values and health in Fort Collins. The property values data assessment report suggested an approach that the City could use to gather more data on property values impacts, if desired. The health data report used a Human Health Risk Assessment process to begin evaluating potential risk and exposure pathways. Key finding of that process included:

- Drinking water in Fort Collins is currently not contaminated by oil and gas extraction.
- Breathing chemicals released to air would be the most likely way a person could be exposed to chemicals of concern such as volatile organic compounds (VOCs) that include benzene, toluene, ethylbenzene, and xylene.
- Fort Collins residents' current exposure to the hazardous components from hydraulic fracturing and oil production in water and soil is likely very limited or non-existent due to limited oil and gas drilling or hydraulic fracturing in the city limits.

The third report provides the results of short term air quality sampling conducted to identify baseline air quality conditions at the Fort Collins Field. The general conclusion from this short-term assessment is that there was no significant difference in observed concentrations of measured pollutants between the oil and gas sites and the urban sites and none of the analyzed compounds were measured at levels of concern that would warrant further study at this time.

This memo also provides a brief background about oil and gas activity in Fort Collins, describes the existing Operator Agreement for the Fort Collins Field, provides a summary of legal proceedings related to the city voter-approved moratorium, and discusses next steps for additional environmental sampling and public engagement.

**I. OIL AND GAS ACTIVITY IN FORT COLLINS**

Oil and gas production within Fort Collins city limits is currently limited to the Fort Collins Field, located in the northeast portion of the city. The Fort Collins Field is an oil-producing field and has been in production since 1924. In the city limits, the field consists of seven oil producing wells and seven Injection wells, all of which are managed by one operator, Memorial Resource Development Corp. Prior to October 2013, Prospect Energy owned the rights to the Fort Collins Field. Operations in this field must comply with regulations established by the Colorado Oil and Gas Commission (COGCC) and the Colorado Department of Public Health and Environment (CDPHE).

In addition, Prospect Energy retained certain leasehold interests within the City described as the Undeveloped Area (UDA), located to the west of the Anheuser Busch plant.

**II. FORT COLLINS OPERATOR AGREEMENT**

An Operator Agreement was established between the City of Fort Collins and then-owner of the Fort Collins Field, Prospect Energy, LLC, in May 2013. This agreement was approved by the City of Fort Collins via Resolution 2013-024, and amended by City Council via Resolution 2013-036 on May 21, 2013. The terms of the Operator Agreement ensure stringent public health and safety measures are in place through Best Management Practices (BMPs), which generally exceed current requirements mandated by the COGCC, and provide strict controls on the release of methane gases and other volatile organic compounds (VOCs).

**Operator Agreement Compliance Status**

The City hired Walsh Environmental Scientists and Engineers, LLC in August 2013 to conduct a compliance audit on elements included in the Operator Agreement signed with Prospect Energy, LLC regarding oil well operations in Fort Collins. The compliance audit occurred from August to October 2013 and identified general compliance except for the following items:

<b>Item not in compliance at time of audit</b>	<b>Resolution</b>
No Emergency Management Plan	Poudre Fire Authority (PFA) reviewed the Emergency Operation Plan and conducted cross training with Prospect Energy and PFA emergency personnel on site
No Spill Control and Countermeasure Plan (SPCC)	In April 2015, Memorial Resource Development, the new site operator, confirmed they have an approved SPCC Plan.
No Erosion Control Plan	City staff determined that no plan was required since there is no active construction on site

### III. FORT COLLINS FRACKING MORATORIUM

#### **Summary of Ballot Measure 2A**

On August 20, 2013, City Council placed a citizen-initiated ordinance on the November 5 ballot that imposed a 5-year moratorium on hydraulic fracturing and the storage of its waste products in Fort Collins. The ballot language states:

*An ordinance placing a moratorium on hydraulic fracturing and the storage of its waste products within the City of Fort Collins or on lands under its jurisdiction for a period of five years, without exemption or exception, in order to fully study the impacts of this process on property values and human health, which moratorium can be lifted upon a ballot measure approved by the people of the City of Fort Collins and which shall apply retroactively as of the date this measure was found to have qualified for placement on the ballot.*

The initiative was passed by the 56.4% of the voters of Fort Collins on November 5, 2013.

The City has been involved with the moratorium in two ways; working to implement the direction provided by the moratorium language, and involvement in legal processes surrounding a suit brought against the City by the Colorado Oil and Gas Association (COGA). Both are summarized below.

#### **Legal Proceedings Summary**

In December 2013, the Colorado Oil and Gas Association (COGA) brought a civil suit against the City of Fort Collins challenging the moratorium in Ballot Measure 2A. COGA claimed that the moratorium is preempted by state law and therefore, the City does not have the authority to enforce it.

In August 2014, District Court Judge Gregory M. Lammons ruled in favor of COGA holding that the moratorium is preempted by state law. In October 2014, the City appealed the District Court's decision to the Court of Appeals. The City also asked the Judge Lammons and the Court of Appeals to stay the effect of Judge Lammons' decision pending the outcome of the appeal, but both requests were denied. In February 2015, the City filed its Opening Brief with the Court of Appeals. In March 2015, COGA filed its Answer Brief with the Court. In April 2015, the City filed its Reply Brief and a request with the Court of Appeals asking it to hear oral argument in this appeal. The Court of Appeals will decide whether to set the case for oral argument or to issue a decision just on the briefs filed. City staff anticipates it will be four to nine months before the Court issues its decision in this appeal. An archive of all the pleadings, briefs, court orders and other court documents can be found at <http://www.fcgov.com/civattorney/status.php>. (See Attachment 1 for a timeline of key legal proceedings.)

#### **City Actions to Address Moratorium Language**

In addition to addressing the legal suit regarding the moratorium, the City has been engaged in efforts to address the moratorium's language to study impacts of fracking on human health and property values. On March 18, 2014 City Council authorized \$50,000 for staff to hire an outside consultant to help evaluate relevant studies, identify gaps in data from existing and upcoming studies, (especially as relevant for Fort Collins), and recommend ways to fill those gaps. This assistance is intended to support the City's effort to "fully study the impacts of... hydraulic

fracturing and the storage of its waste products within the City of Fort Collins or on lands under its jurisdiction... on property values and human health", called for when voters passed Ballot Measure 2A in November 2013.

#### Data Availability for Understanding Health Impacts from Hydraulic Fracturing

The City of Fort Collins hired Dr. Stephen Foster, Terra Mentis Environmental Consulting, to evaluate potential human health impacts from chemicals related to current and potential hydraulic fracturing and oil extraction within the city limits, to target research and allow the appropriate studies to be identified. (See Attachment 2 for the full report.)

In his report, Dr. Foster explains exposure risks, chemicals of concern, potential health effects, data gaps and recommended studies.

The Terra Mentis report highlights:

#### **Potential Impacts to People**

- In general, Fort Collins residents' current exposure to the hazardous components from hydraulic fracturing and oil production in water and soil is likely very limited or non-existent due to limited oil and gas drilling or hydraulic fracturing in the city limits.
- Direct contact with chemicals released during a spill, accident, or well failure into soil and water is possible, but unlikely.
- Drinking water in Fort Collins is currently uncontaminated by oil and gas extraction and is unlikely to become contaminated since water supply sources are not located near sources of petroleum (the City's water supply comes from the Poudre River and reservoirs west of the City).
- Streams, rivers and lakes in Fort Collins also have a low probability of being contaminated.
- Chemicals of concern are volatile organic compounds (VOCs) that include benzene, toluene, ethylbenzene, and xylene.
- Breathing chemicals released to air would be the most likely way a person could be exposed.
- Continuous, routine operations such as production and processing, product storage, loading and unloading actions, as well as short-term operations such as repairs are potential sources of contaminant air releases. However, current exposure is likely to be low due to the effectiveness of the air pollution control equipment and the short duration of non-routine operations.
- The predominant point source of pollution in Fort Collins is from storage tanks used to store produced water and oil.

#### **Studies are Limited**

There are limited completed studies in Colorado measuring the air concentrations of benzene and other VOCs in air near hydraulic fracturing wells. In order to model health effects, it is necessary to know the chemical concentrations to which people may be exposed.

The Terra Mentis report identifies cost estimates for various studies needed to conduct a comprehensive Human Health Risk Assessment (HHRA) for Fort Collins, outlined in the table below.

<b>Study</b>	<b>Estimated Cost</b>
Baseline/background air quality	\$60,000-\$240,000 per 12 months
Air quality in the vicinity of oil wells	\$60,000-\$240,000 per 12 months
Naturally Occurring Radioactive Materials and potential for equipment contaminated	\$5,000-\$10,000 per site
HHRA when suitable environmental and health data are available	\$25,000-\$100,000
Toxicological studies studying human health impacts from hydraulic fracturing	\$1,000,000 to \$5,000,000

The results of the environmental studies and HHRA can be used to support decisions about:

- Development of local regulations on fracking, such as set-back distances and monitoring requirements;
- Development of land use regulations and decisions; and
- Identifying fracking best management practices that might be included in future Operator Agreements, such as VOC emission controls and guidelines for produced water disposal.

Data Availability for Understanding Impacts on Property Values from Hydraulic Fracturing

The City of Fort Collins hired Hunsperger & Weston, LTD to evaluate potential data availability to estimate impacts to property values related to current and potential hydraulic fracturing and oil extraction. (See Attachment 3 for the full report.)

The Hunsperger & Weston report conducted a literature and resources search and developed an annotated bibliography of 148 sources compiled. A number of data gaps were identified, including:

- While literature that references potential environmental and property value impacts associated with fracking is abundant, the direct correlation between fracking impacts and property values is more sparsely documented in a careful manner.
- About one-third of the literature cited in the bibliography (Section 10) address impacts to property values.
- Found six reports that used empirical data to consider the impacts of oil and gas exploration on property values and applied analytical methods that are generally acceptable in a court of law.
- None of these documents is specific to Fort Collins.
- No data exists on the impacts associated with fracking that excludes impacts associated with oil and gas development.

The report makes recommendations for a methodology to conduct a study to fill data gaps. The cost estimate for this study has not been provided but could be developed at minimal additional cost.

#### IV. ENVIRONMENTAL SAMPLING

Funding to conduct environmental sampling associated with oil and gas activity in Fort Collins has been provided through the City budget in 2013/2014 and in 2015/2016. This section describes the results of recently completed sampling and plans for additional environmental sampling.

##### Completed Air Quality Sampling Report

Between November 15, 2013 and February 15, 2014, the City of Fort Collins, in cooperation with Memorial Resource Development, LLC (MRD), performed a short-term air quality monitoring assessment near existing oil and gas operations within the Fort Collins Field. The assessment was designed to meet the requirement for *One Time Baseline Air Quality Monitoring* under condition 21(h) of the Amended Oil and Gas Operator Agreement between the City and MRD dated May 21, 2013. The assessment was also designed to characterize existing ambient air quality conditions near oil and gas operations as compared to air quality conditions at two locations within the city that are considered representative of background and urban air quality exposure.

Hydrogen sulfide was continuously monitored at three sites near existing oil and gas development in the Fort Collins Field to address neighborhood concerns and odor complaints associated with this pollutant. Hydrogen sulfide was not detected at a level above 0.5 ppm at any of the monitoring sites. Although hydrogen sulfide odor can be detected below this level, concentrations typically associated with health impacts were not observed during this project.

Air samples were collected at four locations during five 24-hour sampling episodes. The air samples were analyzed for 80 different organic compounds including "signature" pollutants that can represent urban environments and motor vehicle emissions as well as those that can represent oil and gas emissions. Two sampling sites were located within the existing oil and gas operations in Fort Collins Field, one sampling site was located in City Park, and the fourth site was located downtown near the intersection of Mason and Pitkin streets. The general conclusion from this short-term assessment is that there was no significant difference in observed concentrations of measured pollutants between the oil and gas sites and the urban sites and none of the analyzed compounds were measured at levels of concern that would warrant further study at this time. (See Attachment 4 for the full report.)

##### Planned Groundwater Quality Sampling

The City has a signed contract with Geosyntec Consultants to conduct baseline evaluation of groundwater in the Heartfire neighborhood in the vicinity of active oil wells within City limits. The objective of the work is to sample up to 12 existing groundwater wells to determine water quality in the shallow aquifers in and surrounding the Heartfire neighborhood at the point where humans or animals may be exposed to well water and any potential contaminants. The work will include developing a resident access approach; preparation of a Health and Safety Plan and a Sampling and Analysis Plan; sample collection and laboratory analysis; a Data Quality Review; proper disposal of investigation derived waste; and completion of a final report. Implementation of the scope of work is pending funding authorization and can be completed in approximately a 3-month period depending on obtaining access to 12 private water wells.

## Planned Air Quality Sampling

The City has entered into an intergovernmental agreement with Colorado State University – Department of Atmospheric Science to provide technical services related to oil and gas development and its impact on Fort Collins' air quality. The objectives of this project are to provide data to:

- Characterize existing air quality conditions within Fort Collins or on City owned lands where there is potential for future oil and gas development
- Support regional efforts to characterize emissions from oil and gas production sites that are representative of potential future oil and gas development in the Fort Collins area, and
- Assess potential future air quality impacts at sensitive receptors within Fort Collins or on City owned lands using dispersion modeling tools.

The fieldwork for this project, including air sampling and meteorological monitoring, will begin in June 2015. Data analysis, dispersion modeling, and project results are anticipated in late 2016.

## V. PUBLIC ENGAGEMENT

Upon recent completion of the three draft reports, City staff have been involved in reviewing the reports, preparing brief, digestible summaries of the information, and developing plans to provide this information to the public.

Provision of these reports to City Council via this memo is the first step. Subsequent steps are likely to include:

- Post the reports and a summary to the City Web page at <http://www.fcgov.com/oilandgas/>.
- Hold a meeting with interested residents living adjacent to the Fort Collins Field to discuss the information in the reports.
- Conduct a broader community forum to summarize the information in these reports.
- If desired by City Council, schedule a work session to review this information and discuss next steps.

Staff welcomes City Council feedback on the proposed approach to provide this information to the public.

## Attachments

Attachment 1. Summary of Legal Proceedings Related to Fort Collins Ballot Measure 2A

Attachment 2. "Fort Collins Memorandum 2A Technical Support Document", prepared for the City of Fort Collins by Terra Mentis Environmental Consulting

Attachment 3. "Real Estate Valuation Services Phase 1-Fracking Impact Study", prepared for the City of Fort Collins by Hunsperger & Weston, LTD.

Attachment 4. "City of Fort Collins Data Summary Report – H2S and VOC Air Monitoring Project", prepared for the City of Fort Collins by Air Resource Specialists