

**Battlement Mesa Community  
DRAFT HIA Comment Review Meeting  
January 19, 2011  
1:00pm – 4:00pm  
Battlement Mesa Fire Station office**

**Attendees:**

Battlement Mesa Community Stakeholders – Lynn Shore, Eric Schmela, Jon Black, Suzie Perryman, James Kornberg, Dave Devanney, Larry Soderberg, Jay Haygood, Gary Evenson, Bob Arrington, Garland White, Richard Buchan, Bob Warehime, Ron Galterio, Kathy Wynkoop, Burkie Wynkoop, David Simon, Paul Light, Bonnie Smeltzer, Leslie Robinson, Linda Devanney, Sara McCurdy, Woody Harmeyer, , Marcella Ach, Jo Darnall, Joyce Wizer, Don Gray. (Apologies from the note takers for any missed or misspelled names)

Colorado School of Public Health (CSPH) - Dr. Roxana Witter, Dr. Lee Newman, Dr. John Adgate, Dr. Lisa McKenzie,

Garfield County Public Health (GCPH) – Jim Rada, Paul Reaser

Garfield County Oil and Gas – Judy Jordan

**Meeting Notes:**

Dr. Witter began the meeting with a greeting to all attendees and an expression of gratitude to all of the stakeholders for their ongoing support of the HIA Project and the contributions of information and input to the process. All in attendance were asked to introduce themselves.

Dr. Witter pointed out that this extended stakeholder effort is at the direction of the Garfield County Board of County Commissioners (BOCC) to help the HIA team and the stakeholders gain more clarity and understanding of the issues and concerns expressed in the comments on the Draft HIA in order to improve the final product. She also explained that follow-on meetings would be conducted with the BOCC and an open stakeholder meeting would be held following these initial meetings.

Dr. Witter advised the citizen stakeholder group that a second draft HIA will be prepared by February 28, a second public comment period would be open through March and the final report will be submitted to the BOCC by April 30. A BOCC briefing and an open public meeting regarding the final report will be conducted in May.

Dr. Witter then reiterated that the purpose of the meeting was to talk about the citizen comments on the Draft HIA to help the team make improvements to the final document.

Mr. Devanney questioned whether Antero Resources representatives present at this meeting should be allowed to stay in light of the fact that BCC was not invited to the earlier meeting with Antero Resources. Mr. Rada responded indicating that the announcement of this meeting went to the entire stakeholder list, which includes Antero and several other energy companies. He commented that all stakeholders, in his opinion, are members of the Battlement Mesa community to some degree and should, therefore, be allowed to participate in this meeting. No further discussion.

Dr. Witter continued with a discussion of planned modifications to the Draft HIA based on overall comments received including:

1. Due to confusion raised by the ranking system used as part of the individual impact assessments, the numerical ratings will be removed and replaced with a qualitative rating.(ie, High, Medium, Low)
2. A variety of changes to the Human Health Risk Assessment (Appendix D) are planned in response to technical comments including:
  - a. Average time of acute exposure will be reduced to 7 days from 365 days based on standard risk assessment protocols
  - b. Subchronic toxicity values will be used instead of chronic toxicity values for the acute exposure scenario.
  - c. An elderly person receptor model will be added. Dr McKenzie indicated that adult and child risks for inhalation exposures will be similar.
  - d. The definition of “adjacent to a well pad” as less than ½ mile will be added based on last summer’s odor issues at the Watson Ranch pad and the distance of farthest effected individuals.
  - e. Information from the Garfield County Land Values Study and Socioeconomic studies will be added to the Economic Assessment section at the request of the BOCC.
  - f. More recent air quality data will be incorporated including air quality data from GCPH air monitoring station in Battlement Mesa as baseline information. Other data to be included will be VOC estimates from Antero’s Watson Ranch air sampling, Antero background air quality data from the Monument Ridge pad, Antero baseline groundwater quality data and Antero noise monitoring data.

Dr. Witter continued with a discussion of a selection of comments submitted by Battlement Mesa community members.

Dr. Kornberg asked about the hazard ranking metric being used in the HIA and potential changes in the scale. It appears that the numeric risk ranking method is an attempt to linearize a non-linear situation – how will we adjust that? He also asked how the team plans to evaluate risk without knowing exposures and outcomes or without adequate data. Team members responded that potential risk is what HIA tries to provide. The HIA is not an environmental or epidemiological study. It is a tool for decision makers to make informed decisions using the available data before all the data one would like is available. Dr. Kornberg commented that there is no discussion of ozone or PAH information and that reporting limits for some chemicals in the HHRA (Human Health Risk Assessment) may be above EPA Risk Screening Levels. Dr. Witter reiterated that more information would help them do a better HHRA, however, the team is tasked with using the data and information they have at present to help the BOCC make decisions. The purpose of the HHRA is support to the HIA and the study team is tasked with doing the best they can with the available information. Dr. Kornberg suggested that stronger statements are needed regarding the information that is missing along with the need for a statement for stronger

exposure information. He stated that the HIA needed to turn “whispers to shouts” by changing the emphasis in the information presented.

Dr. Kornberg suggested that without full data, e.g. MSDSs and fracing fluids and conditions, one can not do a risk assessment. He also asked what can CSPH do to get the info to do a full risk assessment? The HIA team agreed that they would do more if they had more information. The team stressed that all information available on risks, as tasked under the scope of the project, was included to be able to support recommendations to the commissioners. Dr. Kornberg suggested that this matter of being provisional and an underestimation of risk be stated “more loudly” as the way it is currently expressed in the Draft HIA does not have enough ‘punch’. He suggested that the HIA team say to Antero “give us the info we need” , full disclosure of compounds, so they can do the best possible HIA. He stated that this information is also needed for workers who are exposed. Dr. Kornberg expressed the need to make the data and information gaps regarding exposures and hazards more obvious. HIA team members stated that they have MSDS but that they are not always complete and they do not provide information about exposure conditions, just the hazards. Dr. Kornberg suggested that CSPH could enter into a non-disclosure agreement with Antero to get the available information.. Ms. Jordan suggested that she has obtained a list of Antero’s fracing chemicals and put this information on the on GC oil and gas web page. She asked what information was missing. Dr. Witter responded that there are some “proprietary” chemicals not named on MSDS and this may vary. A recommendation in the HIA could be to only use chemicals with no proprietary constituents or mixtures and if they must be used, take all necessary measures to limit exposures. Mr. Black indicated that when restrictions or limits on fracing chemicals are imposed, energy companies push the requirements onto their fracing contractors. It then becomes the fracing contractor’s responsibility to provide information regarding the chemicals used. Ms Jordan indicated that the subcontractors might not provide the info to the community. Dr. Kornberg suggested that to the extent that emergency personnel might not be able to do their job, it could be considered relevant to HIA. Ms Jordan responded that COGCC rules require that chemical information must provided to emergency responders when needed. Dr. Witter reiterated again that in the present situation, the HIA intends to identify gaps in the information we have but works to recommend precautions that reduce exposures. Mr. Devanney stated that “limiting exposures” is of little comfort to the local citizens.

Mr. Arrington asked if the HIA team had looked at other urban areas, how these communities deal with issues around gas drilling operations such as light, fumes, noise, etc. Dr. Witter responded that some areas had been looked at but that there is limited information about best management practices (BMPs) in these areas and/or the science behind them.

Dr. Kornberg asked about the definition of adjacent to a well pad and how the team arrived at a ½ mile radius. How does this equate to the minimum setback of 350 feet? Dr McKenzie replied that all people within ½ mile would be considered equally in terms of potential exposure. Dr Newman expanded on this saying that this definition would be more inclusive and more protective than 350 feet in terms of potential exposures. Dr. Adgate added that the team is working hard not to underestimate risk. Mr. Light expressed that if the risk assessment does not differentiate between exposures at varying

distances, it fails to inform citizens of their specific risks. Dr. Witter reminded the group that the definition was needed to identify if impacts occur adjacent to a pad or community wide.

Mr. Haygood asked if financial stressors are considered in terms of their health impacts. Can the HIA team do an assessment of property values impacts and the stress that puts on people? Dr. Witter explained that these issues are addressed in the GC Land Values Study, which will be incorporated into Economic Impact Assessment in the next draft of the HIA.

Ms Robinson expressed that the lack of chemical information is a gaping hole in the study. She suggested that there needs to be a listing of the top 10 gas industry chemicals that we do know about and include this in the HIA. She suggested that a listing of natural vs. unnatural compound in the living environment is needed.

Dr. Kornberg asked why Table 6.1 did not include any of the BTEX Compounds. Dr McKenzie responded that the chemicals on table 6.1 are the chemicals that were provided on the material safety data sheets (MSDS). If they were not provided on the MSDSs, they were not listed in Table 6.1.

Dr. Newman again reiterated to the group to remember that the purposed of the HIA is to use available data as best as we can to identify data and information gaps and to provide recommendations to the BOCC based on the available data. Future study designs will be to fill these gaps and to develop more precision for future assessments. Dr. Adgate reiterated that the HIA Team is aware of the need to be more explicit about data gaps in the next draft.

Dr. Kornberg raised his concern about the HHRA stated risk levels for additional cancer cases of 83 per 100,000. **(Note: After the meeting, Dr. Mckenzie raised a point that the HHRA actually reports a risk level of 83 per 1,000,000 or 8.3 per 100,000)** Although he recognized that this is within the EPA acceptable range for risk, he emphasized that the team needs to state that these are unwanted, imposed risks to the community. Dr. Witter responded that we agree with the comment however, it is not the responsibility of the HIA team to determine what risk levels are acceptable in the community. She added that the report should state more clearly that although the risk levels fall within the EPA acceptable risk range, the calculated levels may be greater than the community is willing to accept. Dr. Newman again reminded the group of the project scope and Dr. McKenzie added that EPA language regarding acceptable risk would be added to the document.

Mr. Arrington raised questions about methane in water and the County's hydrogeological study that points to gas drilling as a possible source of methane in water wells in another area of the County. He raised concern that methane in water may kill vegetation and crops and may be a factor in the health of crop and livestock development. The point was made again that the HIA relates to the Antero Battlement Mesa project. Mr. Arrington stated that this information is relevant to Battlement Mesa as the water supply comes from the river and Silt was having chlorination and organic interaction problems. Mr. Shore stated that Battlement Mesa drinking water treatment plant is governed by the state and meets all standards. Ms. Jordan asked that if we don't know what chemicals are used how can we know what to test for? The water plant can't design a test for all chemicals. She agreed that although most industrial contaminants are likely significantly diluted by the river, we currently cannot

determine if there are industrial chemical components in groundwater that reaches the river. Dr Witter indicated that the HIA report needs to say better what we do not know.

Dr. Kornberg suggested that with regard to vehicular traffic issues, the report should also emphasize the need to limit truck idling times in order to limit vehicular emissions. Dr. McKenzie stated that this may enter into the team's BMP discussions with Antero.

Dr. Kornberg asked, how long will it take to scale up additional studies on the identified data gaps? The team discussed the distinction between the HIA and potential future studies. Dr. Kornberg acknowledged the great work on this project and suggested that the HIA should state clearly what risks are hard/impossible to mitigate, and this is related to the gaps in data and other information. Dr. Witter stated that the recommendations in the report are for mitigation of impacts. If implemented, little or no additional impacts should occur from this development project. Dr. Kornberg agreed but reiterated that impacts that cannot be mitigated should be reported as such. Mr. Arrington noted that the HIA should include mention that risks are increasing incrementally over time as various infrastructure components age. Mr. Soderberg also mentioned that the presence of powerful oxidizers used in oil and gas development could be a common environmental indicator. He stated that he could provide a list of these compounds to the HIA team if needed.

Mr. Schmela asked if the team had considered an analysis of how identified risks related to this project compare to risks that people recognize and already accept. He suggested that this might help improve the understanding of this report by lay people. Dr. Witter suggested that this is a risk communication issue and that the HIA team did not take this course partly because they were asked to talk about the incremental risks associated with this development project as these risks are considered as "non-chosen". Dr. Witter also indicated that chose risk and non-chosen risk may not be considered comparable.

Additional discussion was raised about the ½ mile definition as adjacent to a well pad. Some people may live adjacent to more than one well pad under this definition. Mr. Wynkoop asked if there is a different risk consideration for those that may live near more than one pad. In this situation they may be downwind from several well pads. Dr. Witter explained that the HHRA assumes constant exposure no matter the location or wind direction. It was asked whether Dr. Russ Walker's modeling study regarding exposures and distance was utilized in the HHRA/HIA. Dr. McKenzie stated that the team did not use his model. However, its conclusions were summarized in the report but CSPH did not compare their results to Russ Walker study and their findings were not based on his work.

Another question was raised about the HIA attention to how changes in the community can change psychological health, particularly in the senior population. Is there a way to measure the response of the elderly population to the risks noted in Battlement Mesa? Dr. Witter noted that it is harder to quantify community health impacts. Science does back up that community is important, and age groups matter. It was also asked if there are ways to measure impact on the elderly. It was raised that these types of impacts were studied in Midwest Wyoming. The HIA investigators responded that they do not have the information right now, but this could be added into a future study. They cannot gather it in the

time frame to incorporate this information into the HIA, but they can include some relevant comments into the HIA.

Discussion followed regarding comments received concerning the possibility of delaying Antero's project until more data is available. Dr. Witter stated that this is not something the HIA team can decide to do. They can give information to commissioners and commissioners will decide if there is enough data or not. Dr. Kornberg asked about modeling the loss of primary and secondary water supplies. He suggested again that it is important to emphasize the unknowns with the BOCC, perhaps in the executive summary. Dr. Kornberg stated that if we had a strong recommendation for hydrological studies, it might not change commissioners' actions now, but it could be useful to the commissioners in the future.

Mr. Galterio raised issues regarding the planned water storage and treatment facility. He stated that he believes that the HIA underestimates the catastrophic risk to downhill areas both in and outside of the PUD. Risks to the PUD are magnified by the characteristics of this facility's location. Natural disasters are not considered. If holding pond or cover integrity is compromised, this would cause significant risks to down gradient residents. He does not believe it is appropriate to permit such a facility in this location and stated that there needs to be a stronger recommendation regarding this facility. Dr. Witter acknowledged that the HIA team does not know much about this facility and has not been provided much information other than its planned location and construction specification shared in community meetings. Dr. Kornberg asked if the team could add a scenario to look at what it would take to locate something if Battlement Mesa did not exist. He noted that decision makers would not likely build a community around an existing industrial site. Ms. Jordan offered to assist the team in evaluating a comparable water storage and treatment facility in the County.

Discussion continued regarding the Accident/Malfunction section of the Draft HIA. It was asked whether the team had looked elsewhere around the country to look at how these situations are being handled and if this information could be added to the report. Dr. Witter stated that the team has been to Pennsylvania and have compared notes to a significant extent. These places are looking at what is happening in Colorado, because they see us as being farther ahead. Some experiences in other states can be compared and some cannot. For example, Wyoming is ahead in some ways at looking at drilling impacts but they are not looking at the same issues. Air quality studies in Texas used different methods making direct comparisons with Battlement Mesa air quality data difficult. Fracing fluids are the issue that BM citizens and others are concerned about and the HIA investigators have heard the most about. However, there can be significant differences from area to area in the country as to formations etc. Dr. Kornberg asked for clarification regarding the rate of spills and whether rates are over the life of the project. Dr. McKenzie explained that it is the number of spills greater than 5 barrels that would be expected over life of the project. The COGCC Rules define reportable spills this way. Additional comments included that some fires and spills data are not included. Mr. Rada stated that industry is still obligated to report what is required to report (ie, spills over 5 barrels) to CDPHE and COGCC. Ms. Jordan commented that people can report incidents directly to the operators, which means that there is no question that there is an underreporting to agencies. Ms. Robinson stated that the HIA does not address cumulative effect of spills under 5 barrels, and that subcontractors may not report these events to

COGCC. Dr. Witter stated that these are all good points; the data used in the HIA is what was reported to COGCC. One potential recommendation is to change the definition of what a spill is and note that there are other sources of data that indicate that the 6% rate is likely an underestimate of accidents/spills. The HIA team made note of the general displeasure with the quality of the available spills/accidents data.

Mr. Devanney added some thoughts on psychological issues/concerns that people feel in Battlement Mesa. He related this to drilling issues/concerns on Silt Mesa (families moving out from homes near Antero pad, fumes, and exposure concerns). Ms. Robinson noted that this is a big issue but the BOCC is being asked to arbitrate this issue. She also noted that it is hard to collect data and that the drilling is dividing the community and stress associated with these matters is a big issue. Dr. Newman emphasized that there are ways to measure these psychological impacts, but that this had not been done yet and might be a focus of a future study.. Another person mentioned that the HIA should look at housing turnover, and it is noted that many seniors who could move would move. The HIA may need to look at property turnover, but would have to acquire data to do so. Mr. Arrington suggested that property brokers and mortgage lenders might lend information to this topic as well as data to loan areas being avoided. Dr. Witter responded some brokers had been contacted, but the information was not available. Concerns were also expressed about a new Williams development in Parachute along the river being an example of what residents can expect from development within the PUD.

Tracking birth defects in livestock and pets was discussed as possible next steps. Ms. Jordan suggested that the team consider recommendations in HIA to bring CSU to help track incidents where people think there may be a link between oil and gas developments and birth defects in livestock and pets. She stated that there is a need to know if there is a nexus with human health issues. She also suggested that there is a need to establish a clearinghouse of this type of information to help inform people as the information develops.

Mr. Harmeyer stated that he had developed pneumonia after exposure to a plume from a production site. A discussion of anecdotal data and probable cause followed. Dr. Witter stated that there are many such anecdotal incidents reported to a variety of officials and the media, but currently these reports are not collected in a manner that allows statistical analysis. This does not make this information useless, but it is difficult to interpret if it is not systematically collected. Dr. Kornberg suggested that a 'substantial contributing factor' is enough for a case of individual causation. The CSPH HIA team responded that they need modeled or collected data to be able to build a convincing case. Ms. Jordan added that at present the CSPH investigators don't have actual exposure data yet, which makes linking health reports to exposure difficult.

Mr. Galterio expressed concern that WSCOGA was not part of the initial stakeholder group and therefore should not have a seat in the process. Mr. Rada responded, saying that there never was a formal process for determining who would be stakeholders so everyone who asked is on the stakeholder list. He stated that the intent of the process was to be as broad-based and open as possible allowing all interested parties to participate. He also noted that other energy companies were on the original stakeholder list and that all of them are members of WSCOGA. Mr. Devanney asked why the Grand

River Hospital District is not present and Mr. Rada reported that they have been included in all emails and multiple other communications.

Mr. Devanney expressed his feelings that CDPHE has not represented the concerns of the citizens seriously, and has received several similar comments from other citizens expressing similar concerns. Ms. Jordan agreed that they are not responsive to many local issues. Mr. Rada stated that he considers CDPHE a partner in the work he does in public health and relies heavily on their technical support on many matters. He also mentioned that although their resources are limited, they do respond to complaints and concerns and continue to conduct compliance activities in Garfield County. Mr. Devanney stated that he is considering bringing his concerns about the CDPHE to the State Board of Health. Mr. Rada suggested that this might be a great time for Mr. Devanney to communicate directly with the incoming executive director of CDPHE, Dr. Chris Urbina. Mr. Rada offered to connect the two.

Mr. Arrington raised concerns about pipeline safety issues and a recent rebuke of the Public Utilities Commission as to being too close to the regulated. This being important as they have some enforcement responsibility of pipe line rules. Ms. Jordan noted that the PUC doesn't have purview on pipeline integrity in all cases and there is often a lack of clarity as to who regulates various pipelines.

Mr. Rada concluded the meeting with a reminder that the notes from all stakeholder meetings will be compiled and shared with all stakeholders prior to the general stakeholder meeting in February that will discuss the outcomes of these smaller dialogue sessions. He reminded all attendees to watch for email communications in the near future.

**Remaining HIA Steps:**

**January – Small stakeholder group meetings**

**January 7, Antero and CDPHE**

**January 19, Battlement Mesa Citizens/Community representatives**

**January 31, West Slope COGA**

**February – Full Stakeholder meeting, update BOCC, meeting dates TBD**

**February 28 - 2nd draft HIA Release for Public Comment**

**March BOCC update, Stakeholder update**

**March 31, public comment period closes,**

**April 30, Final HIA release**

**May BOCC Briefing, Public meeting regarding final report**