ABSTRACT

TITLE:	South Fork Texas Creek Gas Seep Area Subsurface Analysis
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ABSTRACT: The San Juan Basin is the most productive coal bed methane reserve in the United States (EIA, 2007). In the northern part of the San Juan Basin, there are major methane seeps near South Fork Texas Creek, about 20 miles east of Durango, Colorado. One might expect that the highest methane seepage would follow the outcrop of the Cretaceous Fruitland Formation. This seepage has been monitored and mitigated since 1994. The mitigation system appears to have an effect, but not all of the methane is being captured. The methane gas may be taking other preferred pathways to the surface. In this area, the seep pattern seems to cut across the strike of the outcrop (K. Hannula, personal communication, February 2015). One possible explanation for high methane seepage at a strange orientation is that there is a fault there. The current CGS geological map (Carroll et al., 1997) of the area does not contain a fault in the suspected area. Therefore, a three dimensional structural model was created in Move to test this competing hypothesis: no fault, as mapped by the Colorado Geological Survey (Carroll et al., 1997) or an unmapped fault. Two models were created based on where the ground surface contact of the Fruitland/Pictured Cliffs lies. Model one was based on the CGS geologic map, where in model two, the ground surface contact was reinterpreted based on an aerial photograph. Planar beds were extended into the subsurface created from mapped bedding orientations along the Fruitland/Pictured Cliffs surface contact. In both models, there existed an outlier plane. The outlier plane in each model expressed offset in strike and dip when compared to the surrounding planar surfaces. This supports the hypothesis of a fault perpendicular to strike. The offset perpendicular to bedding would demonstrate the preferred pathway of methane seepage. Further 3D modeling and research of the area would greatly improve the placement and design of the gas collecting and mitigating systems at South Fork Texas Creek.