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Dear Commissioners,

I'm a current Columbia graduate student who supports a total ban on fracking.

Duke University researchers announced in January that they are finding radioactivity in Pennsylvania sediment from a Pennsylvania stream near a plant where fracking waste is treated. Science is still catching up with the damage fracking has done everywhere it's been done. Meanwhile, the Intergovernmental Panel on Climate Change has said, "Climate change challenges the traditional assumption that past hydrological experience provides a good guide to future conditions." Michael Mann says that it would be a mistake to see extreme weather events as the 'new normal'. What we are dealing with is an "ever-shifting baseline." "So, there isn't a new normal," he explains. "Things get continually worse if we go down this highway." We are dealing with many unknowns and when we do learn something, it's never good news. There are no bases except political expedience and greed that advocate for doing anything but banning all fracking related activities.

When a site is developed for gas well development, the change is dramatic, essentially transforming the land to an industrial landscape. The result is destruction of acres of vegetation (8.8 acres per well pad in 2011 with 30 acres of forest impacts due to edge effects, more than double that is the trend today), soil compaction and destruction of the natural land contours, alterations to watershed drainage patterns, and hydrologically connected systems such as wetlands and vernal pools. Habitats and complex ecosystems are disrupted or lost. 85% of the Upper Delaware where the Marcellus Shale is located is forested. Forest destruction and fragmentation in turn destroys the ability of the forest ecosystem to capture, clean, and infiltrate precipitation, removes the trees that sequester carbon, reduces biodiversity, encourages invasive species, and destroys vital habitat.

After every spill, waste treatment mishap, or agency blunder, there is a potential health tragedy for the lives impacted. When you look at the Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, 5th edition and see the documentation, know that the numbers, and the toxins involved they are not just statistics they are real people who bear the brunt of

an industry that does not care. We have an opportunity in the Delaware Basin to ban fracking and to ban water withdrawals and wastewater containment facilities and waste water treatment and release.

Sincerely,

Esteban Jefferson