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Dear Commissioners,

fracking isn't worth our health!

The regulations proposed by the DRBC are setting up an unsustainable cycle of sending clean water out of the basin and bringing highly contaminated water into the basin. If we are to successfully combat climate change, we must stop our unsustainable practices and avoid implementing new ones., Enabling the shale gas industry by allowing it to take our water and dump its waste in the basin means that we can expect more industrialization in the basin. We will see more pipelines, power plants, and processing facilities. All of that shale gas infrastructure is designed to be around longer than we can afford to be using fossil fuels. If the Commissioners take into account the cumulative climate impacts of the regulations they are considering, they will see they have no choice but to ban all fracking-related activities in the basin.

DRBC's draft regulations do not specifically propose that injection wells that would hold frack wastewater be allowed in the Delaware River Watershed. However, they do propose to allow wastewater from fracking to be brought into the Watershed for storage, treatment and discharge so "storage" could mean long-term storage of wastewater in underground wells within the Basin. This is a practice that threatens public health and the environment. Injection of wastewater does not "treat" waste or remove contaminants, it simply moves the toxic wastewater produced by fracking from one place and time to another. It risks the migration of untreated toxic and radioactive frack wastewater to aquifers and surface water through leaks from the injection well and spills and accidental releases while being handled. Injection wells are causing earthquakes in Ohio and Oklahoma as well as other locations, as documented by USGS and other scientific institutions. Injection wells are not leak-proof and can exposing groundwater and aquifers to contamination from the toxic mix that constitutes untreated frack wastewater when seals are broken and fractures occur as a result of seismic activity., 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., Changes to stream water quality occur where gas drilling and related activities are located. For instance, a publication of the Proceedings of the National Academy of Sciences found streams adjacent to gas wells are negatively impacted by runoff and sedimentation (Total Suspended Solids), harming benthic life, fish and wildlife and causing streams to be eroded and destabilized. DRBC follows the state's stormwater rules where a project is located, leaving loopholes in current nonpoint source laws that allow fracking activities to escape strict oversight. This would be a recipe for disaster if fracking were to occur, which is why it must be banned in the Delaware River Watershed., DRBC regulates withdrawals from streams with the use of a "pass-by flow" or "minimum flow limit" that limits the amount of water that can be withdrawn to protect streams from being overdrawn. However, a pass-by flow that is based on using the Q7-10 (the flow which occurs for a period of seven consecutive days one time in 10 years – considered "drought flow") is not adequate to protect waterways and the life that depends on them and can be expected to cause direct harm to the habitats and water quality of the stream. Using the Q7-10 allows the stream's flow to be artificially "flattened" because the natural flow regime and seasonality will be disrupted and potentially eliminated. An ecological flow analysis of the waterway and an inventory of the species and habitats that live there is an essential protection. To set an ecological flow to govern withdrawals regulators must measure the natural variation of the waterway's flows in terms of volume, rate, temperature, stream structure, and quality to understand the needs of species and the effects of flow on habitat and water quality. Setting protections based on a waterway's ecological flow regime is necessary to give needed protection but that is not what DRBC does or is proposing to do. The withdrawal of water under the draft and current regulations will significantly damage the ecosystems and species of the streams and rivers that would be tapped., Pennsylvania's Wolf administration talks about a 100-year cycle of shale gas development. At present, there are about 10,000 wells in the ground. The industry's goal is 100,000 wells. In the past ten years, more than 300 confirmed cases of water contamination have occurred. Some of those cases involve several families. More than 9,400 complaints have been filed with the DEP. More than 4,400 of those are water-related. Most have gone unaddressed. More than 1200 peer-reviewed studies have identified wide-ranging health effects already impacting Pennsylvanians. Dead cattle and fish kills are just some of the indications that shale gas development is affecting our farm animals and wildlife. Quality of life is all but gone for many in the shale fields and the many more who now spend every available minute fighting pipeline and infrastructure projects. And all of that and much, much more is what has happened just ten years in. Any action by the DRBC that enables an industry that has done so much to harm Pennsylvanians in just ten years and exposes the basin to the particular threats fracking waste and water extraction pose is unacceptable. The DRBC must impose a full fracking ban.

On March 13, leading scientists and physicians released the Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, 5th Edition documenting fracking's harm to

public health. Please read all of the study's findings. Their conclusion, and mine, is that the only way to truly protect public health is to prohibit fracking and all its associated activities (waste hauling, treatment, disposal). I urge you to ban all of these activities in your final regulations., 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,

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